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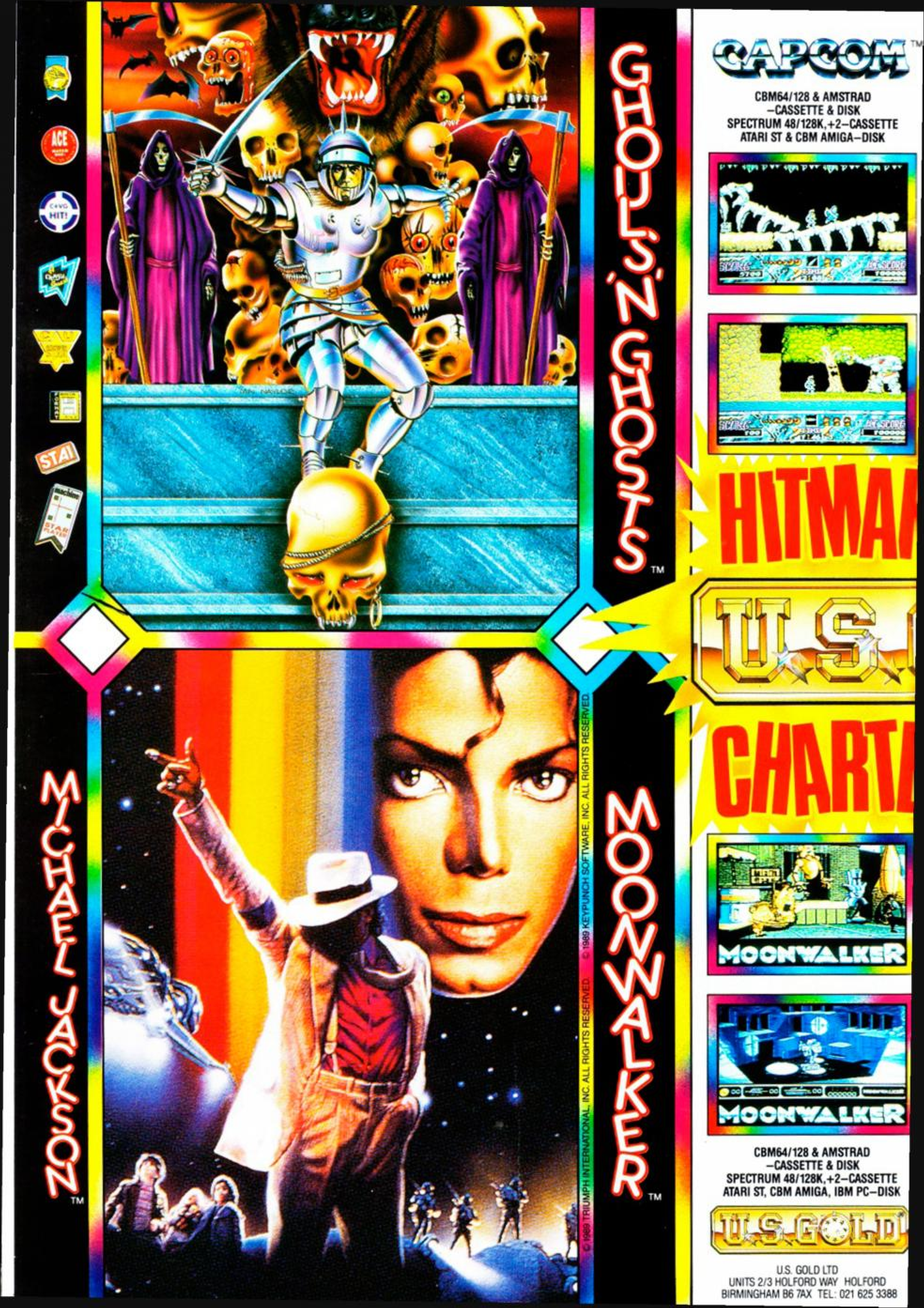


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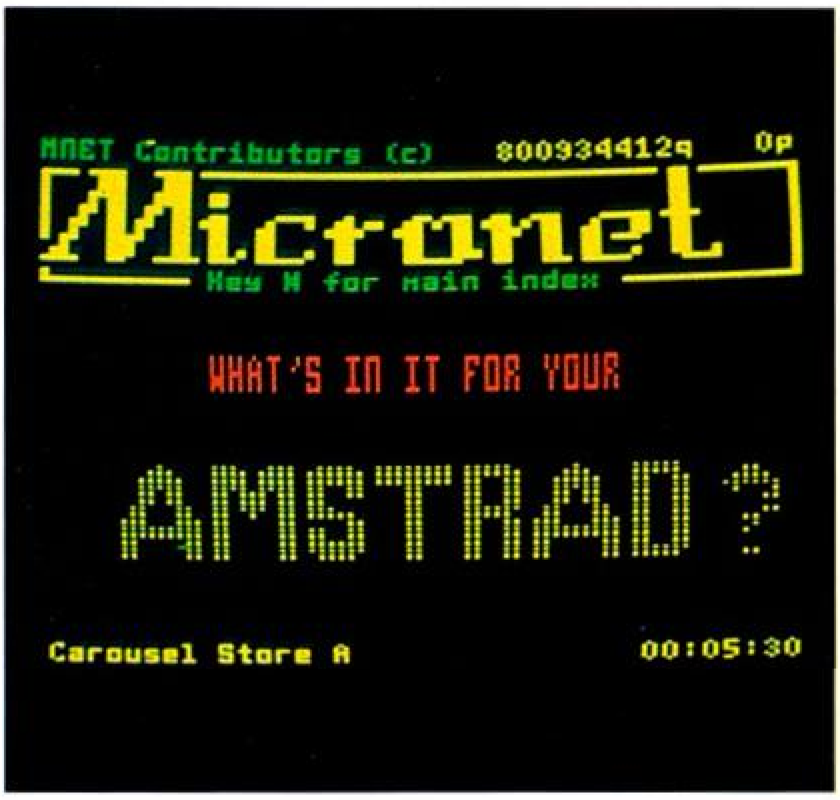
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FRONT END

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CPC USES●HARDWARE●PROGRAMMING



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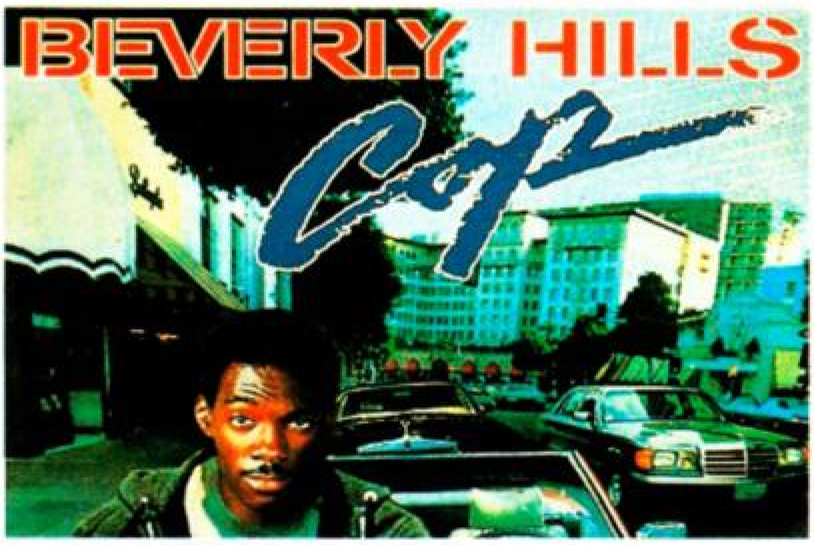
Amstrad Action has a distinctly hi-tech air about it this month. Firstly, there are MIKE WORSLEY's stunning satellite pictures – downloaded directly from orbiting satellites onto his CPC. We didn't even know it could be done, but Mike has all the details.

Secondly, this issue features an exhaustive four-page run-down on the world of comms. Modems, baud rates and protocols sound about as interesting as tuning into Ceefax. (go on, admit it!) But we set out to show that "baud" needn't mean "bored", and comms can be cool. After all, there's a whole world out there – all you have to do is plug in...

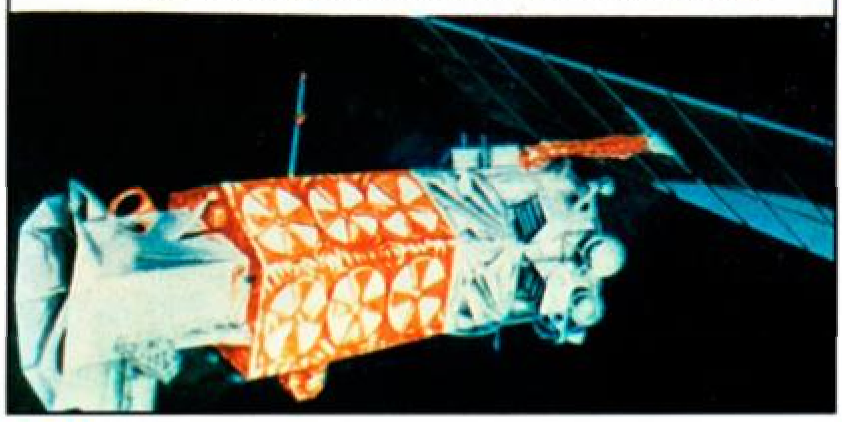
Speaking of which, there's a Micronet Starter Pack on offer to the winner of our special Cmms Competition (see page 18). One lucky reader will get a free modem, RS232, comms software, subscription to Micronet – everything a CPC owner would need to go online. Don't miss it!

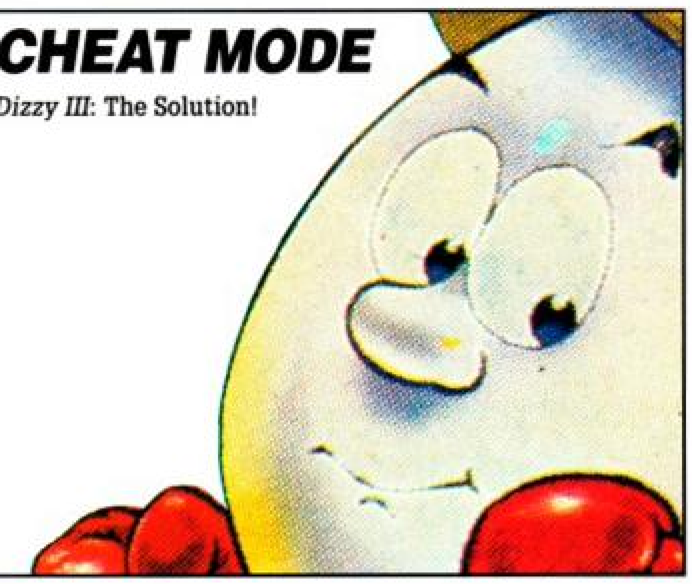
Rod











AMSCENE

releases... updates... previews... new releases... updates... previews... new

OCEAN CLEANS UP

The Manchester Maestros blitz the Christmas charts with *Chase HQ* and *Batman*

After a nailbiting few weeks, the software houses eventually learned the details of their Christmas sales. The results were highly surprising and analysis of the figures reveals some interesting trends concerning our games buying habits in the final weeks of '89. The health of the market was illustrated with software sales exploding. Budget sales doubled, while the the volume of full price purchases increased by over 50%.

Ocean was the undisputed Christmas champion, securing six places in the All Formats (budget and full price) Top 20, according to Gallup. *Chase HQ*, which arrived late on the scene, ripped straight in at Number One mainly due to a vast number of advance orders, the game selling on the strength of the licence and previews. *Batman – The Movie* ran it a close second, while the mighty *Robocop* still held on to eighth place.



● *Chase HQ*: instant Number One at Christmas.

Life wasn't all rosy though for Manchester's finest, as they saw their market share tumble in the two weeks ending December 30. During this period it dipped by 10.8% to a mere 16.8%, as software of every description and every label flew off the shelves. Solace could be found in comparison with the other industry big guns Activision and US Gold, who trailed in at 7.3% and 7.1% respectively.

The Oliver Twins had a spectacular Christmas, sharing the glory for *Ghostbusters II* sneaking the number three slot in the All Formats Top 20 and *Fantasy World Dizzy* securing a highly respectable 17th. Codemasters can draw no such positive conclusions, however, as the budget charts revealed. *Fantasy* and *Treasure Island Dizzy* made it to 5th and 10th place in the All Formats Budgets sales, while the other eight places were taken by games re-released as Hit Squad and *Encore titles*. This appears to indicate that the days of original budget software are numbered, as the back catalogues of the major full price houses begin to dominate the £2.99 sector.

What lies ahead can only be guessed at, but the Christmas charts suggest that only die-hard favourites like *Dizzy* will stand a chance once the *Operation Wolfs* and *Afterburners* begin sales as budget titles.



● Ocean's *Robocop* is still Number 8 in the charts, a whole year after it first appeared.

Ocean too, must be causing furrowed brows among the other full price producers as it continues to dominate the British software market. *Robocop*'s longevity proves that anything is still possible in the relatively young and still slightly unstable leisure software market. So the year ahead could well be an interesting one.

Upgrade reprieve!

Disappointed 464 owners who have been unable to upgrade their machines to 6128 spec following the row between Amstrad and Locomotive have been reprieved.

The dispute between the two companies was fired by the discovery that Amstrad was selling the 6128 ROM upgrades without paying Locomotive royalties. Amstrad claimed that it didn't intend to supply the chip as an upgrade, only as a replacement for defective ROMs. The company has since been much more stringent when supplying the chip, demanding the faulty ROM in return.

However, Walney Audio Visual & Electrical – or WAVE to its friends – has secured the supply of about a thousand chips and has made them available to the public.

If you want to cash in your chips then get in touch with WAVE, 1 Buccleuch Street, Barrow-In-Furness, Cumbria LA14 1SR. Tel 0229 870000.



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releases... updates... previews... new releases... updates... previews... ne
464 UPGRADES BANNE
Locomotive Software withdraws 6128 ROMs after licensing row with Ar
CPC gets the push
Ocean cleaned up!
Domark ge

CHEATS ALWAYS PROSPER!

At least they do when they delve into *Amstrad Action*'s *Cheat Mode*. And now, for all those diehard pokers, fiddlers and tinkerers, comes the ultimate CPC accessory – the *AA Cheat Mode Book. II.* Over 350 games, more than 750 tips, *in excess of* 500 pokes and a massive 16 pages of maps going back all the way to *AA*17 – and including whole wodges of previously unpublished material. And where can you get this indescribably desirable volume? Full details coming soon...

BUBBLE TROUBLE OVER

Last year fans of *Bubble Bobble* were stunned to hear that plans for the sequel, *Rainbow Islands*, had been shelved due to a licensing wrangle. They can now look forward to getting their hands on a copy within months. Ocean has taken up the smash hit arcade title and is busy programming it this very moment.



Fears that *Bubble Bobble*'s younger brother would never see the light of day were first aroused when Telecomsoft was sold to Microprose. Taito felt the licence was not transferable to a third party "We hold the rights to the game. We made an agreement with British Telecom; not Microprose" commented Grant Freerks of Taito at the time. This irked Microprose whose spokesman replied "We got a finished game, but Taito are messing about... We just want to come to a satisfactory conclusion... We know the game's going to be massive!" Leaving Microprose with a complete game they were unable to sell. Things then went silent, as the companies hammered out a solution, leaving gamers fearing the sequel would never surface.

The matter, licence-wise, has now been resolved with Ocean getting the rights to cutesy platform/pacman crossover. It's a major feather in its cap as industry pundits agree the game will be huge, because it's addictive as *Bubble Bobble* and twice as twee. It looks as if for once the public have come out tops, with the game hitting the streets this spring.

Fearful Symmetry

Black Tiger, the all-kicking, all-killing coin-op is undergoing final code checks at US Gold's Birmingham HQ.

Converted from the classic arcade, you control a multi-weapon-wielding nutter as he leaps around a platform world slaying enemies by the skip-load.

Playing in a similar style to *Strider*, and coming from the same label stable – Capcom – hopes are high for mayhem of the highest order.



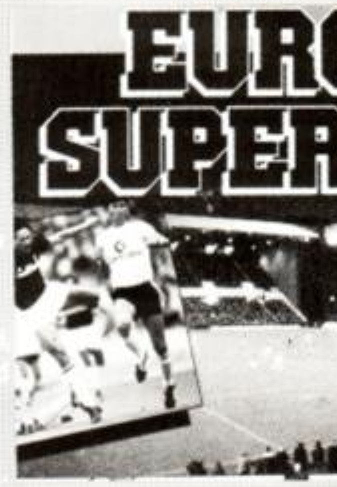
Budget Race on!

Players has been previewing its latest cut-price blockbuster this month, and it proves how tough the budget market for the CPC has become. *The Race*, a two-player head-to-head car duel, is set in a futuristic *Xenon*-style world. With smooth scrolling and complex backgrounds, it proves how far standards have advanced in the world of £2.99 games. Budget no longer means 'bodged-it', as consumer standards and market competition push quality higher than ever.

Icon do that!

CDS is looking to give gamers a hard time with *European Superleague*. An icon-driven management game, it features all the normal trials and tribulations of a soccer boss's life, plus a few extra problems thrown in for good measure. Would-be managers will have to balance training schedules, plan tactics, keep morale up, survive a back-stabbing boardroom and a none too polite press. All while outwitting seven other computer managers, who are also after the title of European Champions.

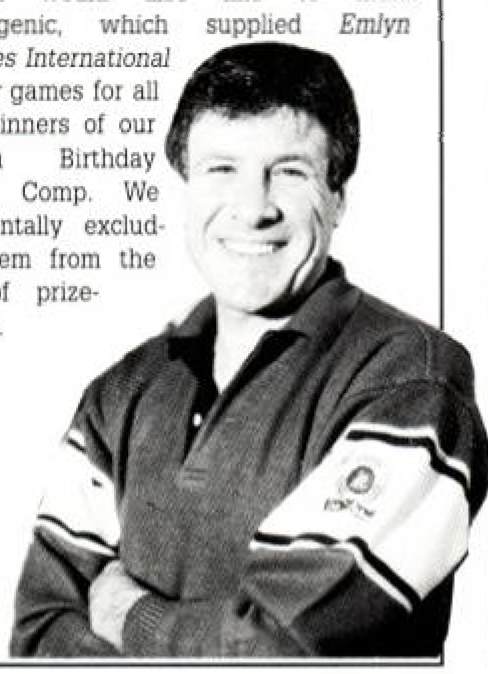
The eight teams involved are Liverpool, Rangers, AC Milan, Real Madrid, Bayern Munich, PSV Eindhoven, Marseilles and a bunch of no-hopers called Arsenal. It looks set to revolutionise football management games (*about time someone did! – ed*) and will be here shortly. *AA* is warming up its star goalkeeper Ollie 'the cat' Alderton and the rest of the squad for the review...



More Trivia

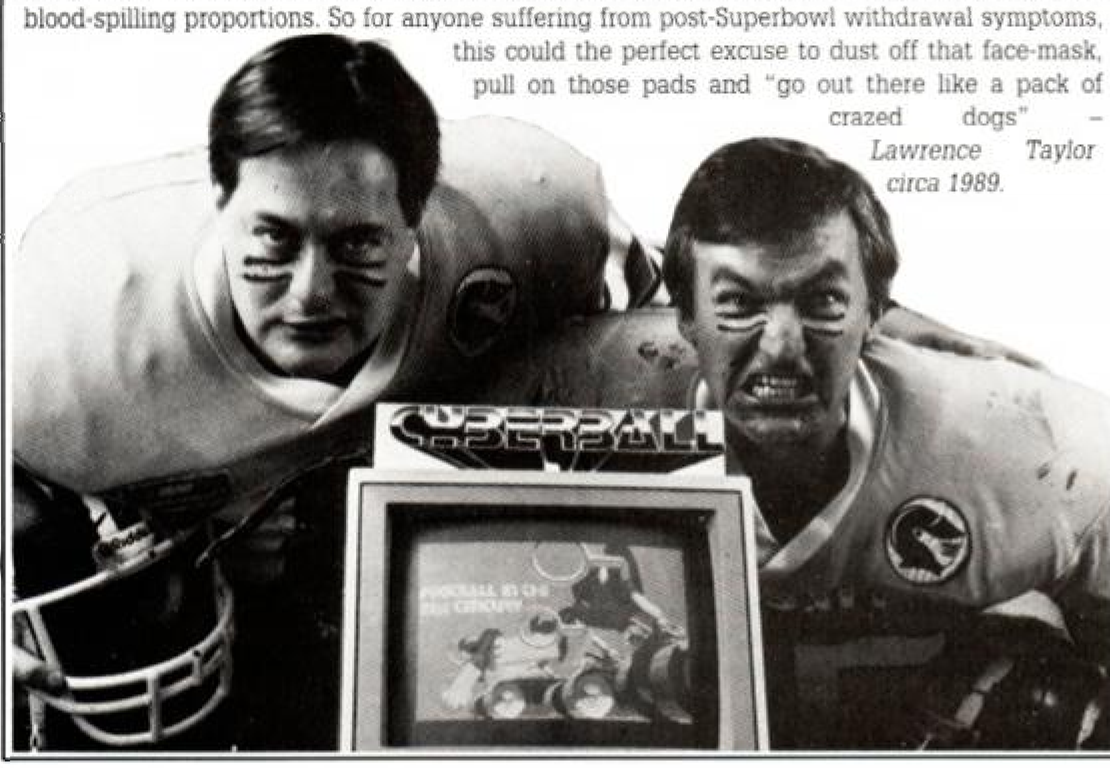
Emlyn Hughes, Audiogenic's golden goose, will be quizzing CPC owners nationwide over the next few months in *Emlyn Hughes' Arcade Quiz*. Inspired by 'pub trivia' machines, the question-and-answer session pays out credits for further games instead of cash, but will be authentic in every other respect. You even get a chance to win some real dosh in a special hidden game, where you answer questions to find gems on a quiz grid.

AA would also like to thank Audiogenic, which supplied *Emlyn Hughes International Soccer* games for all the winners of our Fourth Birthday Mega Comp. We accidentally excluded them from the list of prize-givers.



A load of ball!

Those mild-mannered folks from Domark are putting the finishing touches to its latest project *Cyberball*. It's based on a futristic game that's evolved from American Football into a sport of blood-spilling proportions. So for anyone suffering from post-Superbowl withdrawal symptoms, this could the perfect excuse to dust off that face-mask, pull on those pads and "go out there like a pack of crazed dogs" – *Lawrence Taylor circa 1989.*



Colour upgrade – now's your chance.

Green screen owners wishing to upgrade to colour monitors have always been disgruntled by Amstrad's policy of not selling them separately. Now could be their chance to get hold of one of these displays at a knock-down price.

Branches of Dixons, which recently stopped retailing the CPC range, have been reported to be selling off surplus stock as one-off items, monitors being amongst the bargains on offer.

A Dixons spokesman explained that now that the CPC line had been officially discontinued in their stores, it was "up to individual managers' discretion" how the remaining stocks of ex-display and demonstration items were disposed of.

You'll have to act quickly though, as only a few branches are likely to have any left. Phone around the stores in your area first to avoid any wasted journeys.

CPC TO BE PC-COMPATIBLE?

Siren Software has been working hard recently on an utility that will enable the CPC to read and write to PC disks via an external 3.5-inch drive.

The program will let users transfer data from one machine to the other, simply by swapping the disk between drives. This will be a terrific advantage for people who use PCs at work but who have CPCs at home. Previously, if you wanted to transfer documents from one machine to the other you'd need a serial link, comms software and – obviously – for the two machines to be within a cable-length of each other.

Serious users of the CPC will welcome the product, since it further enhances the CPC's abilities as a professional machine. Not only will it let office PC users 'take their work home with them', those who compose reports, articles, etc on their CPCs will now be able to transfer them to PC format. This will allow professional printing, incorporation into industry-standard PC software and so forth.

The program, which is yet to be named, should be available shortly. *AA* will of course be giving it a thorough going-over when we get our hands on a copy. In the meantime you can talk to Siren Software on 061 228 1831.



● **Swap disks with a PC, using Siren's new utility.**

The Future's Back, twice

Imageworks has announced a major licence coup in scooping the rights to two new movies, *Back To The Future II* and *Back To The Future III*! The first game will be finished later this year, most probably timed to coincide with the video release. *Future III*, is being filmed as we speak, production starting immediately after *II* was completed due to Mr Fox's other commitments.

Both games are to be based on scenes from the film, which, being partially set in the future, offer great possibilities – the hover boards, for example. Features already pencilled in for *Future II* are diagonally-scrolling playing areas and an arcade action style. Let's hope the game's easier to understand than the movie! *AA* will be going back to the review before it arrives (?).





Joyous news

A new range of joysticks has been launched by Spectravideo Ltd. Formerly the UK distributor for Quickshot joysticks, the new models will be originally badged as the Quickjoy range, and will eventually consist of fifteen different products.

The new models will be announced throughout the year, and the prices for the new sticks will vary from under a tenner for budget models to nearly £40 for a top-of-the-range de-luxe version.

Spectravideo's public relations company, Solution PR, can tell you all you need to know about the new joysticks. Call 0273 675503.



A star is born

Seven Stars, publisher of the famous *Qualitas* printer package for 9-pin printers, has annouced news of a 24-pin printer driver for the CPC. The package promises to take full advantage of the extra capabilities that this new generation of printer offers.



The forthcoming utility, to be called *Miraprint*, can be used in conjunction with popular word processing packages like *Protext* and *Tasword*, and boasts such features as micro-justification – giving pixel perfect accurate spacing between words – and downloadable fonts – eight of which will be included as standard, plus a font editor to design your own.

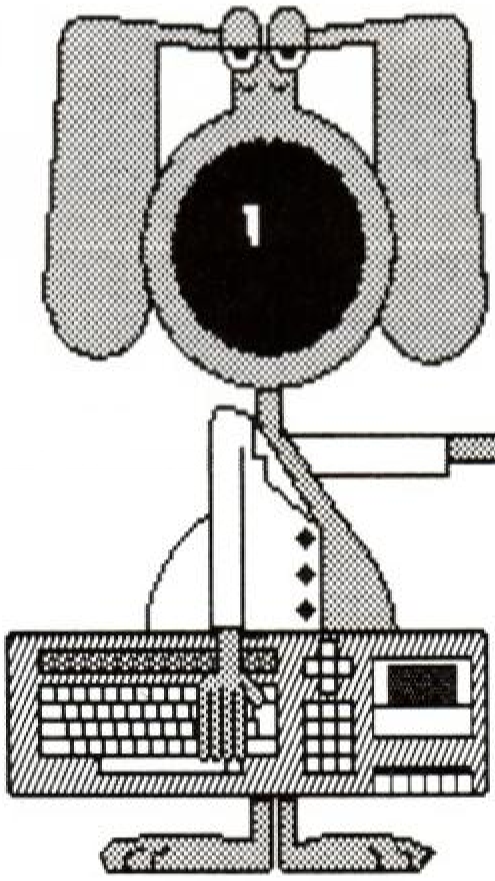
The utility will work with any printer that can emulate the industry-standard Epson LQ range, but will require an 8-bit printer port to take advantage of the font downloading feature.

The program is currently going through testing and will be available mid-February costing £24.95 from **Seven Stars Publishing, 34 Squirrel Rise, Marlow, Bucks SL7 3PN (06284 3445)**.

Going down the tubes...

Empire has caught *Pipe Mania*! It's a game that's been under development for quite a while, but looks to have that elusive addictive quality so many games seek, but so few capture.
Organising a mass of inter-connecting pipes into a certain order within a certain time may not sound that thrilling, but the intensity required to win is astounding. *AA* is waiting with spanners in hand ready for some major-league plumbing, and will bring you an estimate as soon as work is complete.





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REACTION

Here we go, more ranting and raving – and that's just the replies!

● You've never had it so good

I live in this litte-known backwater town in the midde of nowhere in West Malaysia. I have an Amstrad CPC464 with a DD1 plus *Maxam*, *Utopia* and *Locksmith* on ROM (the ROMs were given to me). I used to own a CPC6128 plus an external tape drive but I had to sell it off. You see, a long time ago, our country used to thrive on the business of pirated software. It was the only way to ever get your software. Disks here were sold at £2.50), games copied onto disk were only £3.00. Remember, the copyright act did not cover computer software. Everything was going fine, in this illegal way, when one of the companies dealing with Amstrad got sued by Amsoft for violation. Later, the copyright law over computer software comes into effect and everybody starts running for the hills. Next thing I knew, the CPC machines were being phased out. Why? Well, here in sunny, blistering Malaysia, everything is taxed so high it is almost impossible to obtain imported products. So the software distributors don't bother to stock CPC products at all.

Another gripe, the worst of the lot, is that I have to travel several hundred miles just to get *AA*. Couldn't you guys do anything about this? Subscription is a bit heavy, moreover it is very difficult to obtain *AA*s in good condition. I once came upon a shop that sold *AA* and its free covertape separately! I still bought it, though.

£15

At this particular moment, I only have seven issues of *AA*, the latest being *AA*42. I've tried countless times ordering the magazine, which incidentally costs $10.50, but without luck.

And lastly, even if this letter ever gets read or printed, I may never see it. I don't really mind, I'll stick with my second-hand 464. I just hope everyone out there's happy with what they have and what they *can* have, so stop complaining just because you can't get past a level in *Arkanoid*. Just consider yourself very lucky.

Warren Nicholas
Johor Darul Takzim
West Malaysia

AA: *We've spoken to our subscriptions people down in Somerton, and they tell us that a year's subscription to AA sent to Malaysia would be £21.50 by surface mail, and the Post Office claims a delivery time of around ten days. Any other overseas readers simply write to our call our Somerton office on 0458 74011 for a quote.*

● Prodigal reader

Whilst browsing through a newsagents I saw *Amstrad Action*. Nothing, spectacular, I hear you say, but to me it was. Back in the days when the 464 had first come out, I bought *AA* and *Amtix!* and was graced with a 464 as a Christmas present. Time passed and I gradually started to find other pastimes rather than playing all the time on my 464. About that time *Amtix!* was "disbanded" and although I liked *AA*, in those days it was less professional and so I stopped buying it after issue 21. After that happened my attention turned to music but, bringing back the newsagent part, I have tired of this interest now and whilst I was in said newsagent it brought back many memories and I just had to buy issue 52. I congratulate you on an excellent cover tape, and the magazine has a fully professional layout and style that simply knocks the pants off my old *Amtix!*s and on a brilliant games review system. A lot better and clearer than the Bob "Waggler" Wade pioneering version. £1.95!! When I bought *AA* yonks ago, the price for an issue with a cover cassette was £1.25! I think that the CPC range has proven its worth again with this new Codemasters CD software. Until buying the magazine again I was thinking about buying an Atari ST or an Amiga, but now I think I'll buy a 6128 and build it up.

Ross For
Edinburgh

AA: *Bob Wade replies: "The review system hasn't really changed apart from layout. All the current markings were being applied even then – so there!"*

As for old covertape issues being £1.25, that's nothing! Eee, when I were a lad y'could buy a whole paper mill for five and sixpence and still 'ave enough left over t'take the wife and kids t'Blackpool for eighteen months etc etc. Sorry about the price rises, Ross, that's inflation for you!

● Speaking out

Please can you send the enclosed tape to Jonathan White from Essex (*AA*52) who says he needs the SSA-1 tape for his Speech Synthesiser.

And secondly, on the 4th January at about 6:35pm I completed *Turbo Outrun* on my second go ever (and I have never even played *Outrun*).

After completing Los Angeles you load another section which is a picture of the F-40 and a sign that says "Congratulations". Then you load in another bit and it shows you the course. Was I the first to complete this on the Amstrad?

WRITE ON !

Because we get so many letters every month (mostly fan-mail for Trenton) we can't print them all. But we do actually read ALL of them. So just because your letter doesn't appear in *AA*'s hallowed pages, it doesn't mean its contents haven't been studied and inwardly digested by the *AA* team.

There are only three categories of letter that almost certainly won't get printed. (The *AA* team reserve the right to add more as and when we think of them.) These are as follows:

1. Ones that end "please, *please*, print this letter". We feel absolutely rotten about these and simply can't bear to look at them.

2. Ones that end "I BET YOU WON'T PRINT THIS". That's because they're always written by people in a fuming rage who'd get us sued by every company they mention and who don't make sense from one paragraph to the next anyway.

3. Ones that end "I enclose an SAE for your reply". We simply don't have the *time* to write back. Anyway, they make us feel just as rotten as the ones in (1.)



● *Turbo OutRun*: Alex O'Mahony finished it on his second attempt. Can anyone beat that?

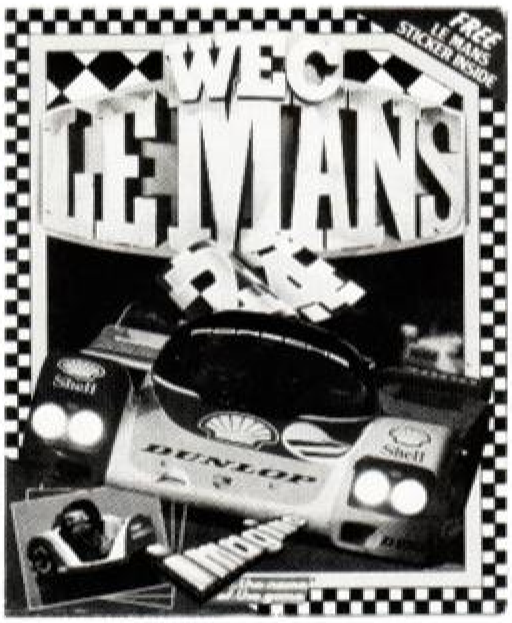
Alex O'Mahony
Fardingbridge, Hants

AA: *Many thanks for the tape, Alex. We're sure Jonathan will be most grateful. As for being the first to finish* Turbo Outrun, *we simply don't know – any other offers?*

● Put a sock in it

I am writing to you to tell you about a brilliant idea for an addition to racing games (e.g. *WEC Le Mans*).

My idea is to include in the game a sequence where the player can have a "punch up" with one of the computer-controlled drivers if the players loses because a computer-controlled car got in the way. This sequence would make the player feel better without having to hit the nearest available object.



● More violence in racing games? Malcolm Jones says Yes!

Malcolm Jones
Wolverhampton

AA: That's awful Malcolm – fancy introducing nasty fisticuffs into racing games! (Hee hee hee). I wonder what you'd call them? Continental Bloodbath? Whack Le Mans? Nelson Piquet Simulator? *... "Yes, Mr Piquet. Yes, yes, OK then, nine o' clock at Bow Street Magistrates..." Oh dear.*

● Video titling again

In your January issue (*AA*52) a letter from Daniel Bourne caught my eye. He asked is there a video titling set for the CPC464? In the January *Camcorder* magazine a video titler for the Amstrad 664 and 6128 was available from PRF Software, 26 Olton Road, Mickelover, Derbyshire DE3 5PL priced at £19.99 – perhaps they can help?

Lastly, thanks for the January Covertape. I loaded it onto disk and now I play on it almost every day. Keep up the good work at *AA*.

Mr Anonymous

● Mr Serious writes...

I, like every other sentient CPC owner, am very worried that the Amiga and Atari ST monsters will swallow the whole lot of us. But I, unlike probably any of your 40,000 readers, have noticed that *AA* now realises the gravity of the situation. In January's edition there was a stark hardening of attitudes towards anything that was not Amstrad. OK, fine, you can poke fun all you want at Specs and Comms, because these give a bad name to the word "8-bit", but to suggest that an Atari (a reader suggested it, but you printed it) should be used as a wheel-chock is funny but utter nonsense. Everybody knows that its graphics are video-quality and

● Shakespeare 0: *AA* 1

I really hate to do this, I really, really do,
but I have to tell you off about your Star printer review.

You say in issue fifty-two to see page twenty-two,
but is it there – no way!

You say in issue fifty-one to say page twenty-two,
but is it in – no, not today!

(Enough! – ed)

You say in issue fifty to see page twenty-two,
not there! it's just a comp to play!

You say in issue forty-nine to see page twenty-two,
Page twenty-three looks hopeful, an MT2-2-2? Belay!

You say in issue forty-eight to see page twenty-two,
Is this it? No! it's just an ad/review to write your way.

(Arrrgggh – I can't stand any more!)

You say in issue forty-sev'n to see page twenty-two,
I found it! No, it's not the one, Seikosha – what a bore,
I hope this won't go on and on my thumbs are getting sore.
But, wot's this 'ere? Page twenty-three. I've found it! Wow! Yippee!

(I'll go along with that)

I hope the damned thing's worth it, after all of my research,
I want to know before I have to get down off my perch,
and send my note to Santa, don't leave me in the lurch.

'Tis good, you said – and so it is – it came the other day,
and now to come to the point of this my weary roundelay:-

In couplets rhyming, more or less,
(But rather less than more),
I've printed you this little verse
To make a point that's sore.
When are you going to update
That little list you've gotten
And say which issue things are in
This shouldn't be forgotten.

Mike Lyons
Tyldesley

AA: With bated breath and pounding hearts,
we studied ev'ry line.
Convinced that that accursed review,
would turn up (please!) this time.

For as the darkness gathered,
and day turned into night,
Adam went and missed his bus
and the gas fire wouldn't light.

And still we read... and read... and read
'til worn out fit to swoon,
sure that clever though your poem was,
it had to finish soon.

But no, it went on through the night,
and come the break of day,
the three of us were poring still
o'er your wretched roundelay.

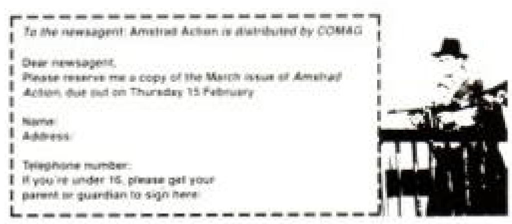
But one thing that it taught us,
by which we must abide,
if nothing else gets done today,
WE'LL CHANGE THAT BLINKIN' GUIDE!

● Completely wrong

Okay I spotted them both – your deliberate mistakes, I refer to. In issue number 51, December 1989, the clip coupon for the newsagent on page 94 is for the magazine due out on 9th November 1989, i.e. the once the coupon is in. And you did it again in issue number 52, the January issue, only this time you used the same clip as before to order the December issue – a little late, I think. I enclose both clip coupons as proof of purchase just in case you are thinking of giving a prize.

Allen G Hatch
Cardiff

AA: Our publisher spotted both our deliberate mistakes too, and we've all had to cough up a tenner each as a "prize" already. Thanks for enclosing the coupons. We jumped up and down on them for a while, then took them outside and burnt them.


To the newsagent: Amstrad Action is distributed by COMAG

Dear newsagent,
Please reserve me a copy of the March issue of *Amstrad Action*, due out on Thursday 15 February

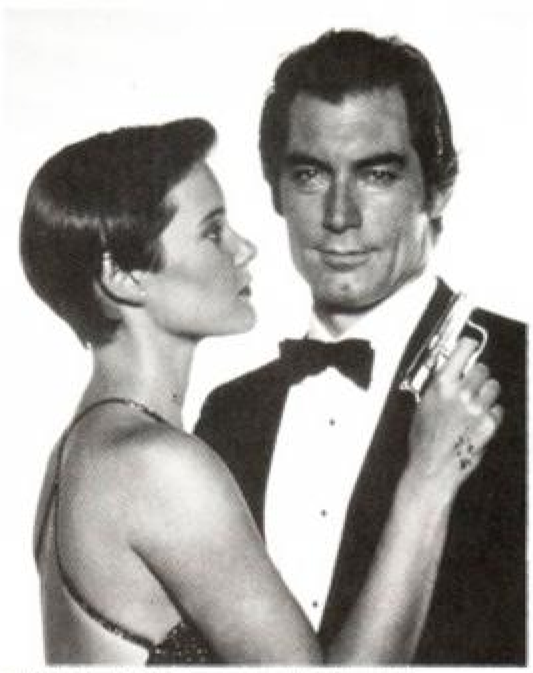
Name:
Address:

Telephone number:
If you're under 16, please get your parent or guardian to sign here:

● The famous *Amstrad Action* newsagents coupon. Mind you, in years to come it'll be a collectors item, wait and see.

some arcade conversions are identical to the real thing, not to mention the sound. I see your slagging-off of this machine as a sign of desperation, and you are trying all you know to prevent us from buying one. I do love my 6128, however, and I think that the main reason for not buying an ST or Amiga is that the CPC is tried and tested and utterly faithful, but so many people are jumping on the bandwagon and "upgrading". You may say I am talking through a hole in my disc-drive, but I've seen it all before with poor old Dragon Data (my D64 sits proudly to the left of my 6128), when *Dragon User* tried to fight two of the above micros single-handedly. Perhaps we will see in the future that "AA" is short for "Atari Action"...?

Michael Aidulis
Glasgow



● "Is that a 68000 in your pocket James?" "No, I've just been swimming."

AA: *Steady on... you're joking, aren't you? I know we were. And we were certainly not seriously suggesting Atari STs should be used as wheel chocks. After all, how many people do own light aircraft...?*

● Laser Squad zapped

I am writing to warn your readers about *Laser Squad* on disk. The game is very good, worthy of the Mastergame status it received, but has incomplete instructions.

The problem is that the instructions don't mention the Amstrad disk version or how to load it (**Run"LS"** does the trick). They also don't tell you not to save the game on the game disk, or that only one game may be saved on one side of a disk, which can't be used for anything else.

I hope this letter saves anyone else from corrupting their disk like I did.

C Williams
Knottingly, W Yorks

AA: *Ouch! Although it has to be said that it's fairly common knowledge you should never save games onto game disks. That bit about not using that disk for anything else is a bit of a giveaway too, don't you think?*

We've had a word with the lads at Blade Software, however, and if you send them your knackered disk they'll be more than happy to send you a replacement. Their address is ***Target Games, 19 The Rows, The High, Harlow, Essex CM20 1BZ.***

● Never too late...

I am in Year Six (top class) at Hayfield County Primary School. We could choose an individual topic theme, and I chose computers.

I have got a Sinclair Spectrum, and most of my friends have got Amstrads. Please could you give me some information on Sinclair/Amstrad computers. I would be very grateful.

Mattie Beal
Stockport

AA: *We phoned up Amstrad, Mattie, and you should be getting loads of information through the post any day now.*

● Printing glitch

Many thanks for the Xmas Covertape. I had one problem with the word processor. When I tried to print out the READ.ME file, all I could get was the message "Printer Off Line". The only way I could print the instructions was to remove line 2290 which gives the error message.

Tony Baker
Fareham, Hants

AA: *Er yes, we did get one or two calls about that. Thanks for the solution.*

● Gold discovered in Barnsley!

On hearing Dixons were not to restock their shelves with CPC hardware I enquired about any surplus monitors (colour) for my 6128. They got me one for £99.99. I snapped their hands off. I own a 6128 with green screen, the kids have a 664 with MP2. I needed the colour monitor so the kids could use the green screen. The man at Dixons said he had in the region of 30 surplus monitors in stock control, and having seen so many adverts for the need for colour monitors in your magazine and sister publication *New Computer Express* I thought it was an ideal chance to let your readers know of this surplus. The branch in question is Dixons, Cheapside, Barnsley, South Yorkshire.

The other reason for writing to your ace mag is my second hobby, music. As I have said, I own a 6128 which I use not only for games but for compiling files, which consist of the weekly position of certain albums in the LP charts which are compiled by Gallup. Ideally, I would like to input the weekly chart and have the computer read the chart and note the position of certain albums then convert their positions into points – i.e. 75 points for being first, 74 for being second and so on – then add these points up weekly in the form of another file under the title of the album. Is this possible using the 6128? If not, please advise as to a suitable program.

Steven Burrows
Barnsley

AA: *Hmm – sounds straightforward enough to us. But just to make it interesting, we'll put up £20 for the first working routine to come in on disk. Send it to: LP Routine, Amstrad Action, Beauford Court, 30 Monmouth Street, Bath, Avon BA1 2AP. And don't forget the SAE or you won't get your disk back!*

● Sticky moments

I know I am a pain with cover cassettes but here I am again criticising you. You see I asked for a replacement for your *Dizzy* (very old Covertape) as mine proved faulty. Unfortunately, you sent me another dud! It's not my computer or tape recorder either, because it can perfectly load *Dizzy II* and *Dizzy III* and any other budget release I happen to own!

Not only this, but a more recent tape, namely *Shinobi*, fails to work in addition to this. The other games I have got work perfectly, but not *Shinobi* or *Dizzy*. Why?

Russell Whitwell
Ross-on-Wye

AA: *Our technical expert Rod Lawton explains: "Of those covertapes sent back to us because they won't load, nearly all of them are suffering from nothing worse than a sticky cassette mechanism. Simply rap the cassette sharply on any flat surface to free it up and try again." Dr Lawton will be lecturing next week at Bath University on the use of 5lb claw hammers in micro-electronics...*

● Boxing clever

I found Peter Ceresole's article on getting the IBM "box" characters from *Protext* extremely interesting. I knew that it was possible, but I don't use *Protext* often and hadn't got down to working out how.

I normally use *Brunword*, which has an equivalent facility. You can define 21 keys so as to display any symbol of your choice and to send any sequence of 10 characters to the printer. Ten of the keys are the numerals 0 to 9 preceded by CNTRL, so that you are not using up keys you might otherwise want to use. It has a character designer incorporated so that you're spared the labour of designing manually with squared paper.

I've used this to produce various utilities. I get the "box" characters with one, and with another various commands for use with *Qualitas*. With this I can turn *Qualitas* On and Off, normal height or double, justified or not, set tabs, and print captions double-height double-width emphasised in each of the three fonts. All with an appropriate symbol on-screen. If anyone sends a disk and sae to **11 Battery Close, Gosport PO12 4PA** I'll be pleased to send a copy.

M Catton

BROADLEY SPEAKING



EMMA BROADLEY ponders the perils of upgrading – ST owners prepare to be outraged! – and has a few words to say about 'standardisation' in the world of comms...

By now we're all sick and tired of the "my machine is better than yours" debate, but a new angle on the whole business has been provided by Rick Fickling, of Bucknall, Lancashire. He's got the following to say:

"With the rumours of the demise of the CPC doing the rounds again, I would like to record the viewpoint of someone who was daft enought to upgrade to an Atari ST.

In the summer of 1988, the ST looked like the machine to have. I looked at the screenshots of ST games and decided that it was worth the money for the obviously superior graphics and speed; the extra memory would be nice for WP as well. So I bought one.

I suspect many people who do not own one of these computers are unaware of its deficiencies. True, the games are visually much nicer, but I've yet to play anything on my ST that can offer the same enjoyment I've had from playing *Rebelstar* and *Gryzor* on my humble 6128. The technology has moved on, but the gameplay hasn't. Anyone who believes they will get more fun out of ST games is going to be disappointed. And then, of course, there's the price to consider. I am not prepared to pay £25 for a game that I know will have no more lasting appeal than its equivalent on the CPC. So I buy the CPC version instead.

"Anyone who believes they will get more fun out of ST games is going to be disappointed"

Another problem is the lack of BASIC on ROM. On the surface, it seems a good idea to have a machine that can readily load in any kind of operating system or language that is available; in practice, it's a pain. I'm no great programmer, but I sometimes write small progs in BASIC to help solve occasional problems, such as a prog I wrote to convert millimetres into feet and inches (which I understand) when I was trying to decide whether an MFI bedroom suite would actually fit in. So which machine do I reach for? The ST, which needs the BASIC language disk loaded before you can either enter, edit or run BASIC programs, or the CPC, which just needs switching on?

"I would advise anyone thinking about upgrading to think again"

It also annoys me that simple machine code games occupy acres of memory on the ST. This is not really the machine's fault, because a great many so-called machine code programs on the ST are written in BASIC and then compiled as machine code. This is no bad thing, as it allows people who can only use BASIC, such as myself, to write quite decent games. The problem is that very few people bother to write machine code the hard way any more. They use a BASIC compiler, which provides most of the speed of true machine code, but in a grossly inflated program size. The result of all this is that the ST's advantage where disk capacity and memory are concerned is largely offset; a couple of trashy games can occupy the whole of a 720K disk.

Finally, it may comfort users of Amstrad products to know that Atari users feel similarly neglected. Atari is a company with problems, and a reputation for announcing new hardware which never sees the light of day. Endless aggravation is caused by the fact that Atari keep swapping the disk drives in STs for different models which are not necessarily better, and cause compatibility problems with some software. An earlier operating system change has also caused trouble, with some games refusing to run on the newer system.

So, I would advise anyone thinking about upgrading to think again. The CPC has limitations, no question about that, but it is probably the most hassle-free computer on the market; in other words, you can use it for all kinds of purposes without constantly consulting the user manual. And with the pathetic manual supplied with the ST, you won't get far."

Broadley Brickbats

Disagree with any of the opinions expressed in Ms Broadley's column? If so, write them down and send them in to:

BROADLEY BRICKBATS
Amstrad Action
Beauford Court
30 Monmouth Street
Bath BA1 2AP

And afterwards, change your name and go to live in South America for ten years and you should be OK...

The grass is always greener

Just for once it's nice to hear the opinions of someone who's actually *tried* upgrading. It just confirms a long-held belief of mine that people replace their machinery just for the sake of it.

Of course, it's an easy trap to fall into. It's in the interests of everyone in the industry to keep people buying – and advertisers are professional masters of the knack of getting people to part with their hard-earned money. They do this by trying to demonstrate all the time just how much better off you'll be if you sell your old equipment and buy the wonderful new xyz.

In our case, of course, we're talking about selling your CPC and upgrading to either one of the 16-bit machines from Atari and Commodore, or a PC-compatible.

Indeed, my accountant's been trying to get me to buy a PC for months now – he's a computer freak, I should add. Yet when I ask him to explain to me in detail just how it will benefit me, he just resorts to all the usual, vague, arguments. Arguments like, "the CPC is out of date... a PC is much faster... there's much more software... it's *the* standard business computer..." and so on.

The fact is, though, that my 6128 does everything I want it to. Word processing? Show me a PC word processor that runs faster than *Protext*. Databases? I use *Masterfile III* – PC databases may be ten times as powerful, but how much power do you need for mailing lists, telephone numbers and stock-keeping? And spreadsheets? *Supercalc II* is fine – I'm running a small business, not the national economy.

If my accountant keeps on nagging me to upgrade to a PC, of course, then maybe I will have to change – change my *accountant*!

COMMS TO US ALL

Nice to see the lads on *AA* are tackling the thorny subject of comms in this issue. I used to run my own bulletin board before *my* ceramics business took off, and from my own experience of trying to get the system running and the queries I had from fellow users, it was obvious that all these so-called "standards" hardly mean a thing.

And that's what really gets me mad. There are at least three different "standard" RS232 connectors on different home micros for one thing, and what with all the jargon – baud rates, stop bits, parity, Xmodem protocols, Hayes compatibility – what hope has the beginner got? Isn't it about time someone sat down and devised a straightforward, easily-understood, *standard*, formula for telephone communications? When that day arrives there'll be dancing in the streets – at least there will be in my street!



SPORTS, MOVIES, ARCADE..
PLATOON
The first casualty of war is innocence.
© 1987 Hemdale Film Corporation. All rights reserved.
COMBAT SCHOOL
IK+
MIAMI VICE
TM and © 1984 Universal City Studios, Inc. All Rights Reserved.
ARKANOID
TAITO
SUPER HANG-ON
The Hit Squad
WE'VE GOT 'EM ALL
THE HIT NAMES
THE HIT GAMES
ALL FOR ONLY 2.99 EACH



AA goes

THE INTERNATIONAL LANGUAGE?

There are no geographical limits for comms users. Basically, you can swap files with anyone who has a telephone – no matter where in the world they are!

It's an ideal way to contact penpals overseas, too. English is reckoned to be the world's biggest "second language", and even though verbal communication can sometimes be a problem, most people can make themselves understood in written English.

Communicating internationally via modem makes a great deal of sense. It might typically take only a few seconds to download a letter to a foreign penpal, so with care and a little forward planning, those telephone bills can be kept to a minimum.

Rushing in where angels fear to tread (the fool), ADAM WARING blows the world of comms wide open...

Mention 'comms' to even the most enthusiastic computer buff and chances are they'll tell you just where to stick your RS232 interface!

Comms are notorious either for working to a fashion, almost working but not quite, or not working at all. Stories of countless hours spent stabbing at a hot keyboard and getting nowhere are enough to put anybody off. Getting your comms set-up to work can be a pain, but once your system's up and running then a whole new world opens up right before your eyes...

Setting the tone

Comms is short for communications, and in its most basic form involves connecting two computers together and getting them to 'talk' to each other. As different makes and types of computer have different internal designs and operating systems, a standard method of connection is necessary. The RS232 'interface' is that standard. It enables any computer to be connected to any other machine as long as it too has an RS232 interface.

This is all very well if the computers concerned are sat next to each other on the desk, but problems arise when you want to send information to your Uncle Harry's machine at the other end of the country. Obviously it's impractical to have a two hundred mile-long cable to connect the computers together. Fortunately, a national network of cables already exists – the public telephone network!

The telephone, of course, was invented solely for transmission of the human voice, and computers can't simply be plugged directly into the 'phone system. Computers put out digital signals which need to be converted into an audible form suitable for sending down the telephone wires. This is where the 'modem' comes in. It translates the electrical pulses from the computer into audible tones – a process known as modulation. On the other end of the 'phone line another modem is required to reconvert the beeps back into a digital signal. This is a reversal of the modulation procedure, and known as demodulation – hence the acronym MODEM.



Early beginnings

The first modems, back in the early '80s, were very basic devices. You connected them to the 'phone network simply by placing the telephone handset into a pair of rubber cups, known as acoustic couplers. This was primitive and unreliable, and meant that information could only be sent at very low speeds. The main reason was that it was against the law to connect anything but a BT phone to the telephone exchange.

When the telephone service was deregulated a few years ago, however, it became possible to connect other equipment directly into the system , and now all modems come with a standard telephone-style jack plug. Direct electrical connection allows faster and more reliable information transfer.

Bits and pieces

As well as a modem, CPC, RS232 lead and 'phone socket, you'll need a couple of additional items.



● RS232 interface: the essential CPC add-on.

COMM AGAIN?
– Those technical terms explained

BAUD RATE – The speed of data transmission, measured in bits per second. A baud rate of 1200 works out as about 150 characters per second. Transmit and Receive baud rates can be different, in which case the speed is quoted as Transmit/Receive rates, e.g. 75/1200.

BBS – Bulletin board system. See below.

BULLETIN BOARD – A computer system running software that allows users to call up the machine, download files and read and send messages to and from other users.

DOWNLOAD – The techie term for copying a file from another system to your machine.

HAYES – A standard comunications command structure used to control your modem, originally devised by American modem manufacturer Hayes, hence the name.

MAILBOX – Area of a bulletin board that stores messages sent to you by other users.

MODEM – MOdulator/DEModulator. Device that connects the computer to the 'phone line.

RS232 – An industry-standard interface that connects two pieces of quite different machinery together, allowing them to communicate.

SYSOP – SYStem OPerator. This is the person who runs a bulletin board.

UPLOAD – Opposite of download. You transmit the file, another machine recieves it.

on - line



THE LOOK

Two main methods of viewing information are presently in use in the UK:

- **The most common is by 80-column scrolling terminal. As each line of text appears, the screen scrolls upwards to accomodate it. Text can be thought of as being transmitted in one long continuous stream of ASCII data.**
- **Viewdata is used by some bulletin boards, but mainly by subscription services such as Prestel. Information is sent as a series of pages or 'frames'. Viewdata is similar in appearance to Teletext – the extra signal broadcast alongside TV signals that supplies TV listings etc. The 40-column display is not strictly ASCII, and it contains several extra control codes, making it capable of displaying colour and (somewhat blocky) graphics.**

Viewdata was originally designed for use with special electronic terminals that automatically translated these codes to display the appropriate colours. For use on a home micro, the comms software used must have a viewdata emulation mode to convert it properly.

Special software is required to get the CPC to communicate with the modem. This will allow you to direct the modem to set baud (transmission) rates, arrange 'protocols', dial numbers and transmit data. The other thing you'll need is an RS232 interface. Some machines have these built-in, others need a special plug-in module. Amstrad, in its infinite wisdom, decided to omit this industry-standard interface from the CPC's specification. You can buy both the software and RS232 as seperate items, but in many cases they are available bundled together, making them cheaper. A lot of comms software is available on ROM, and most RS232 interfaces have an in-built ROM socket, so an additional ROM board may not be needed.

Going on-line

Once you have all the relevant hardware and software set up and working on your CPC it's time to start communicating with the outside world. If you have a friend who has a computer (any make or model – comms is all about information interchange between all sorts of machinery) and modem, you can start by giving their machine a call.

Arrange a time first (don't get the computer to ring them without letting them know first though – if they answer the phone themselves all they'll hear is a lot of rather unpleasant high-pitched bleeps) and with a bit of luck you'll soon be happily swapping data over the 'phone line.

Bulletin Boards

One problem with direct communication with other users, however, is that you must first make mutual arrangements as to the time you are going to log-on to each other's systems.

For this reason, and because whole networks of users can develop, the new phenomenon of Bulletin Boards sprang up. These consist of a 'host' computer and modem combination that's permanently 'on-line', and will automatically answer calls made to it from other machines. They run a special piece of control software thatlooks after all the system housekeeping – such as storing users' messages and file handling, alotting the amount of time users have on-line and the areas of information accessible to them. The advantages are numerous: Contact can be made with people that you would be unlikely to 'meet' under more conventional circumstances; bulletin boards have areas set aside for various groups of interest, where 'bulletins' on the subject can be read by the user.; public domain files sit there, just waiting to be downloaded for free.

Probably the best thing about bulletin boards, though, is their mailbox facility. This is how you 'talk' to other people using the same board. Every user has their own Mailbox, and messages can be sent to and from.

Whenever you log-on to the BBS you are informed whether any new mail is waiting for you, and you can then automatically reply. Alternatively, certain mail might be addressed to all the other users – you might have a technical problem you need help with, for example.

WHICH MODEM?

Modems vary in price quite considerably. As with most things in life, you get what you pay for, and if you are after a full featured modem then you'll have to be prepared to fork out heavily. We have selected three modems, all good value for their price range and well recommended.

- **Datachat 1223 – Bog-standard modem ideal for beginners. It uses the V23 standard and so is ideal for accessing viewdata services. Most Bulletin Boards will operate at this speed. A little on the slow side if you want to transmit data. Biggest advantage is that it's free to Micronet subscribers.**
- **Pace Linnet – Mid-range modem that offers good features at a reasonable price. Offically priced at £174.80, it can picked up for about £150 if you shop around. In addition to V23 it also offers a V21 mode, as well as Hayes-compatability and auto answer/dial. The ProPak modem from Micronet is really a Linnet in disguise, and for £220.95 you get the CPC starter pack, but with this modem substituting the Datachat 1223.**
- **Amstrad SM2400 – All-singing, all-dancing Hayes-compatable modem with everything you're likely to need. The £286.35 price tag may seem expensive, but for the features it's a bargain. Auto-everything, supporting V21/22/22bis/23 baud rates and both pulse and tone dialling. It's the sort of modem you'd could set up your own Bulletin Board with. Note that members of the Amstrad User Club can pick one up for just £207. If you're going to get one of these then it may be worth joining the user club just for that purpose!**

The pros

The next step up from bulletin boards are the bigger, professionally-run information and messaging services, examples being Telecom Gold, Microlink and Prestel. Whereas most BBS are run for the fun of it, often at the personal expense of the SYSOP (system operator), these professional services are run as profit-making businesses, and you have to pay a fee to use them. Like bulletin boards, they are constantly



MICRONET MAESTROS

Most of the professional information services are aimed at business and serious users, Micronet, however, is designed for the home computer enthusiast, and is more likely to be of interest to *AA* readers than the others.

Micronet is part of Prestel. Subscribers have access to the whole of Prestel included in the cost. A small additional charge will give you access to Telecom Gold via a gateway link.

You have a third of a million pages of information at your fingertips when you join this service. You can send letters to thousands of other users using electronic mail, or chat to them live – up to 64 at a time. And when you've finished the latest copy of *AA*, why not read *Amsters Cage*, the electronic CPC magazine? If you're after the ultimate gaming experience then play *Shades*, the infamous multi-user adventure where you begin the long journey from being a novice to a wizard, with plenty of problem-solving and spell-casting on the way. Also, there's *Starnet*, the space wargame, where you fight intersteller battles in order to become the ruler of the universe.



● Micronet is about the largest bulleting board service for home micro owners.

The price is right

A year's subscription to Micronet and Prestel costs £92. On top of that you will have to pay a connect charge whenever you use the service. This is 8.05 pence a minute 8am-6pm Mon-Sat, free from midnight to 8am and 1.15 pence at all other times. On top of this are the normal telephone call charges. However, the servive can be called up at local rates from anywhere in the country, which easily outwieghs the cost of the connection charges.

The best thing about Micronet as far as the new user is concerned is that it offers one of the cheapest – and easiest – ways to get started in comms. If you pay for the year's subscription in full, then you are entitled to a free Datachat 1223 modem . Basic though it may be, it's well worth the cost of the subscription.

Also available is the Micronet starter pack. It costs £138 and, in addition to a year's subscription, includes all the beginner needs to get started. For that all-in-one price you get the CAGE ROM communications software, an RS232 interface and cable, and of course, the Datachat 1223 Modem.

● *If you're a total newcommer to comms then we strongly recommend the starter pack. You can speak to Micronet on 0800 200 700 if you want to know more.*

COMPETITION TIME!

One of our lucky readers is going to experience the delights of Prestel and Micronet for a whole year – for free! Those kind chaps at Micronet have put a starter pack – worth almost £140 – up for grabs, and all you have to do is *answer three simple questions.*

Who knows, that lucky reader could be you...

1. What type of interface connects the CPC to a modem?
a) RS232
b) RS423
c) Centronics

What baud rate is used to communicate with Prestel?
a) 75/1200
b) 300/300
c) 1200/75

What is Micronet's CPC magazine called?
a) *CPC Centre*
b) *Amster's Cage*
c) *Arnold's Archives*

Scribble your answers onto the back of a postcard and address it to MICRONET COMPETITION, Amstrad Action, Beauford Court, 30 Monmouth Street, Bath, Avon BA1 2AP. Make sure it arrives by the March 31st 1990.

on-line and can be accessed by many users. The main difference is they can cater for many such users simultaneously, allowing communi cation between several people at once. For example, chatlines allow you to hold conferences with many users at a time, and multi-user games can be played involving tens, even hundreds of people – if you're a games freak then you'll love it.

Mix and Match

But is comms *really* a time consuming, fiddly, awkward business? Well it can be when you try using hardware and software from a range of manufacturers.

In theory, all RS232 equipment is mutually compatible. In practice, however, that soon goes out the window. In its simplest form, RS232 needs three wires to work – a transit wire, a receive wire, and a ground.

However, although the 'standard' socket uses 25 pins, several manufactures for reasons of cost and compactness decided to use different connectors, and now the RS232 connection could be anything from a five-pin DIN plug to a nine-pin 'D' socket.

Once you've got that sorted out, and your RS232 interface is properly connected to your modem, you've got to get the software to work with your hardware.

Modems vary greatly. Some require you to dial manually, whilst others do it automatically. Some software won't work with Hayes-compatible modems, whilst other works exclusively with that standard. Make sure that the software is compatible with your modem before you buy it.

Taking the plunge

Assuming you've finally got all your hardware/software up and running, when you log-on to a bulletin board for the first time, don't expect to be able to talk to someone else or download free software straight away.

Your first visit to the board is likely to consist of filling out an application form – a sort of electronic questionnaire. Next time you log-on you will be able to move around the system more freely. The more you use the board, the more privilages you will earn. Helping other users via the message section and uploading some of your own programs to the board will see your status rapidly rise.

On some boards you need to subscribe to use all but the most elementary services. The charge is relatively low, typically around £10-£20 – about the price of a game or two but much more fun! Systems which charge usually offer something extra for your money, such as additional phone lines allowing multi-user activities.

If you get really into comms then you may consider running your own Bulletin Board. For this you will need special software. On other machines this is freely available through the public domain, but on the CPC you would probably have to write your own.

For the full story on what it's like to be a SYSOP, see opposite...

MORE PRIZES!

If you've already got a comms set-up, then this is the competition for you! Julian Sinclair of Cynotel Systems has put up the following prizes:

● 1 WINNER: Co-SysOp access, access to all areas, editing powers, emergency pager, their own area, hacking CUG access, name on logoff screen, public message editing, SysOp control – total value £50.

● 10 RUNNERS-UP: Subscription with hacking CUG access, messaging, Telesoftware, access to most areas, CPC technical assistance, fax service etc – total value £15.

All you have to do is complete the following sentence: "I think comms is interesting because

....

....

The most original reply (assuming we can print it!) wins. Send your entries to CYNOTEL COMP, Amstrad Action, Beauford Court, 30 Monmouth Street, Bath BA1 2AP by 30th March.

A SYSOP speaks out

JULIAN SINCLAIR runs the country's only bulletin board for CPC owners actually *run* on a CPC. This is his story...

Cynotel is a viewdata (i.e Prestel-style) Bulletin Board System run on an Amstrad CPC 6128. It started about three years ago as a small system running from 9pm-8am the next day.

However, over the past few years, dedication from everyone involved has led to the system's metamorphosis. It now contains many areas including Hacking and the only financial Special Interest Group in the country.

Running 24 hours a day inevitably places strain on the system. A maintenance contract is a must to cover the day when the monitor explodes (believe you me, it's happened!). I frequently find myself stuck with a problematic user or abuse of the system, which can be infuriating.

It is not all hard graft. Positive feedback from users is enjoyable, or the starting of a new section.

Money matters

Starting up in communications need not be costly – usually it's the phone bill itself that kills! Nonetheless, a fairly large capital outlay is needed for the launching of a Bulletin Board. Over £400 must be spent before you have a system that will function. Add to that the man-hours you will be spending editing and advertising the initial launch, and the system costs really will run up.

A second CPC is desirable if you plan to run a system 24 hours a day and with regular updates. Otherwise you find that calls keep coming in when you are using the host computer to edit the screens of the BBS.

The hardware

The running of a bulletin board is one of the strangest uses of the CPC, and probably the most demanding. It combines many of the items of hardware available for the CPC and uses them all to the full.

The main problem with the CPC lies in the fact that there is no built-in RS232 interface. In addition, the different makers of the add-on RS232s have not agreed on specific port addresses and commands. For example, the Pace and KDS interfaces are totally incompatible, and thus not much use if you want to run a Bulletin Board.

I originally started with the basic Nightingale and AMstrad/Pace RS232 but neither were suitable for such a system.

The requirements of the system are quite costly and complicated. For starters, a high-capacity second drive is an absolute necessity.

Unfortunately, due to memory restraints, the operating system must be stored in sideways RAM, the purpose of which is twofold. It eliminates the need for a bulky ROMbox with the second drive operating system hanging off the back of the peripheral port and it is also extremely convenient.

Of course, there would be no system without the RS232 and Modem. In this instance it is a KDS I/F with the 4.0 ROM fitted, complemented by a designer modem from Modem Marketing.

The Pace RS232 is not suitable for sytems under AMSDOS as it has no RSXs Capable of answering the phone at 75/1200 baud, which is the standard speed for viewdata systems, including Prestel.

The software involved is a rather enhanced version of the original by Andrew Keeley. It performs two basic functions. Firstly, to send and receive data in the form of pre-edited pages and secondly, to communicate with the modem and detect whenever the phone rings or somebody rings off. Naturally, it has many more functions but those are the basic criteria of any host software (software which operates the BBS and its facilities).

Page preparation

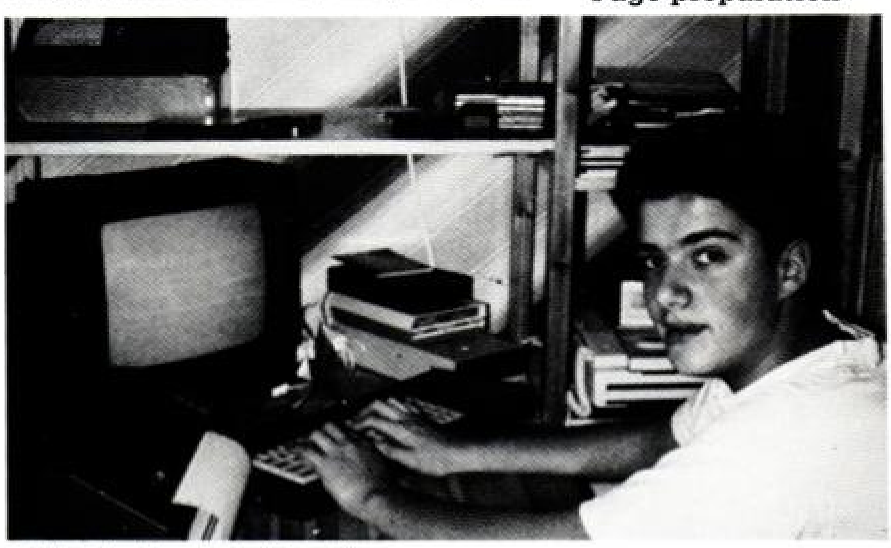
So far the bare, prerequsite equipment has been discussed. There is obviously a considerable amount of work involved in the preperation of material to be transmitted, too.

Once the system has been running for a year or more and the various areas are established properly then the updating process must begin. Over one hour each day can be easily spent updating the system or improving the software, and perhaps three or four at weekends.

It is not a quick task to create pages of quality graphics and colourful text. You cannot simply type files into a word processor and transmit data 'down-the-line'.

Despite all the difficulties, running a BBS opens up a dimension of the CPC's yet to be fully exploited.

Indeed, some might call it "the Lost World of the CPC"



● Julian Sinclair, owner of Cynotel.

CONTACTS

Once you've got everything plugged in, your finger will be itching to dial up a few Bulletin Boards. There are literally thousands of them out there, and you'll be able to access the vast majority. Browse through them and find out which one is most suited to your needs. It's fairly likely that you'll want to regularly use one or two which have an area of interest specifically named at the CPC owner. These numbers should get you started.

CYNOTEL – 01 346 2816 – V23 viewdata – 7E1 Probably the only Bulletin Board actually run on a CPC. Uses a high capacity 5.25-inch disk drive to store all the data needed to control the system.

Gnome At Home – 01 888 8894 – V23 viewdata – 7E1 – Very professional-looking board, catering for a variety of home micros. Has more than one line, so you can talk to others 'live'. Subscriptions are required for full access, but there is still plenty for the browser to see.

Mektronic Consultants – 061 773 7739 – V21/22/22bis/23 – 8N1 – Manchester-based board with good CPC section that has a messages area and is well stocked with files. Run by a computer retailer, so don't be suprised if you're offered goodies on-line!

TUG II – 0905 775191 – V21/22/22bis – 8N1 – A well-used board with a *huge* selection of free CPC software. Anything from PD programs to game cheats and pokes.

Winchester Remote – 0962 69322 – V21/22/22bis/23 – 8N1 – Another general board with an excellent CPC section. Plenty of files to download, and many special interest areas.

Baud rates:
V21 – 300/300
V22 – 1200/1200
V22bis – 2400/2400
V23 – 1200/75
V23 viewdata – 1200/75 viewdata emulation required

Configurations:
8N1 – 8 data bits, No parity, 1 stop bit. Most scrolling bulletin boards use this configuration.

FORUM

Problems, problems, problems... ADAM WARING rakcs his brains

● A LOAD of old...

I've got an Amstrad CPC464 which I use often, but when I try to load some of my old Amsoft games they fail, sounding as if they're going too fast. My new games – like *Batman* and *Chase HQ* – load perfectly well though. What is wrong? Is it my Data-recorder, or are my Amsoft games dodgy or knackered?

Stuart Buss
Swanley
Kent



With all due respect, it was a trait of the old Amsoft games that they were slightly dodgy. However, I don't think they were dodgy in the way that you mean.

The games are old. Tapes tend to get stretched and warped with age. I think it's likely, as you rightly surmised, that the tapes are – to use a technical term – knackered.

● Is your lead long enough?

I have had a CPC464 for nigh on four years now and it has never let me down. The problem is that I'm running out of room for all my peripherals! I have a 64K memory expansion, a Dk'tronics speech unit, Multiface II and the DD-1 disk drive interface, all chained into the back of my CPC. The leads from the monitor simply aren't long enough to cope with all these. Is it possible to buy some extended cables to accomodate them all?

Justin Vasey
Renhold
Bedfordshire

Try MJC Supplies, 40a Queen Street, Hitchin, Herts SG4 9TS (0462 432897). They will sell you the appropriate leads for your 464 for £6.95. 6128 and 664 owners can get a set for their machine for a pound extra.

● Programmers' challenge

I thought that it may be a good idea to include a section within *Forum* where readers can write in asking for what they want.

For example, I am currently studying A levels, one of these is computer science. We use the BBC range of computers, whose BASIC has some functions that are not available on the CPC. I would like to develop similar programs at home for use in school, and have been collecting 'bolt-on' routines to make my CPC more beeb like, such as the EVAL listing published *AA*51. What I still need is:

● Format - without entering CPM+

● . for a catalogue (disc)

REPEAT-UNTIL instead of WHILE-WEND

So I offer the above as a challenge to all the machine code programmers out there (I am only just beginning to program in machine code myself).

Finally, is there any way to run a BASIC program from CPM? I have a 464 with the 6128 upgrade ROM.

Andrew Manning
Manchester

People have always been welcome to write in with questions and requests for solutions to their problems, that's what the columns all about.

I once did an RSX to replace the CAT command with |DOG, so it shouldn't be too difficult to solve your catalogue request. The other two could prove a tad more tricky, so there's a cash prize waiting for the best program...

You won't be able to run a Locomotive BASIC listing from CP/M, however if you've got access to the PCW's Mallard BASIC then read on...

● First time for everything

I own a CPC464 with the built-in tape drive, and I wish to purchase a disk drive for my machine. The advertisements for disk drives are confusing me. They say that I should already own a first drive, what does this mean?

Also, could you tell me if there's any truth in the rumours that the *OCP Advanced Art Studio* does not work on a 464, even an expanded one?

James Wright
Crewe
Cheshire

For 'first drive' read 'Amstrad DD-1'. Basically, all the third-party disk drives won't connect to your 464 properly as they need the Disc Opertaing System – supplied on a ROM in the DD-1 interface – to provide the extra commands to operate it.

OCP Art will work fine with a 464 as long as it has a 64K RAM pack. We have sucessfully used with the Dk'tronics model with our 464.

● Four-letter words

I have recently started taking your *Amstrad Action* magazine. It's seems ideal for someone like myself who purchased a CPC last year.

Looking at the "TYPE-INS" section, would I be right in thinking that the symbols in the brackets before each line is a proof reading code? I cannot find any reference to this code in the magazine.

Have you ever published a proof reading program, and if so could you please indicate which issue of *AA* that it was published.

Dr T W Owen
Hereford

As you correctly surmise, the four-letter code in front of each line is a checksum for proof reading.

The program, 'Type-Writer', which was written by my predecessor Pat McDonald, generates checksums for each line of BASIC which can be compared to those in the magazine, eliminating typing errors.

It has been published many times in the past – the last time it appeared was on our Christmas cover cassette (AA52), so I would go for that back-issue if I were you, as you don't even have to type it in!

● Going Loco

I have an Amstrad 6128 at home, and use an Amstrad PCW8512 at work for writing BASIC applications. Both computers can read and write to the same disks, so would it be possible to continue working on my PCW BASIC programs at home on my 6128?

Mike Cleverley
Hull

You won't be able to load your programs written on the PCW into Locomotive BASIC, Mike, as the different BASICs have different ways of interperating the commands. However, the Mallard BASIC, as supplied with your PCW is a CP/M application, which means you will be able to take home your copy of Mallard BASIC, load it into your 6128 via CP/M and continue work on your programs.



● Can you run programs written in CPC BASIC on the PCW?

● What a dump

I read with considerable interest the suggestion in *AA51* that Multifaced screens could be loaded into *Art Studio* and then printed. I have a 6128, DMP2160 and Multiface II+. Unfortunately, I cannot get *Advanced Art Studio* to actually load the screen – the error message being that the file is too large. I would be grateful for any suggestions.

Martin Hack
Sutton Colfield



● How do you import Multifaced screens into *Art Studio*?

We printed a screen-dumped picture to prove that it was possible in the December issue – unfortunately we didn't print the listing that converted the Multiface grabs to Art Studio *format!*

So here it is, just for you Martin, the official convert program. (Save typing – it's available on disk from Waring Enterprises plc, just £19.95!). (Joke! – ed)

```
MODE 2:MEMORY
&3FFF:LOAD"filename.bin",&4000:CALL
&8000:SAVE"filename.scr",b,&C000,&4000
```

● Drive swapping

I have a CPC464 with the DD-1 disk drive. I recently bought an FD-1 as a second drive.

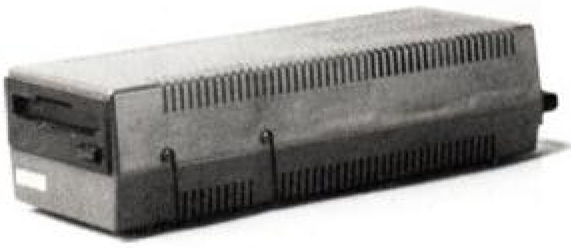
The user instructions say that drive A should always be regarded as the Master Disk Drive, and drive B as the secondary drive. It goes on to say that the CP/M system disk should always be booted from drive A.

Since I upgraded to the DD1 the drive has failed twice causing corruption on my system disk, rendering it unloadable. Is there any difference between the FD-1 and DD-1? The outward apperance of both is the same, and I would like to swap them over if at all possible.

E H Gilbert
Portsmouth

Amstrad's DD-1 comprises of two seperate items – a Disk Operating System interface, and a standard FD-1 drive. The drive A and drive B configration is determined directly by which sockets they are plugged into on the cable.

You may swap them round at will, as they are identical inside the case as well as outside.



● Is it a bird, is it a plane...?

Am I a complete dunce, or did an as-yet-unreported error creep into your very first collection of type-ins, issue *AA50*, November last year?

The program concerned is SUPER CAT, on page 72. There is a reference to 'the BASIC loader', but I cannot anywhere find such a loader. without it the instruction CALL &A500 simply resets the computer.

I think the program SUPER CAT would be very useful to me, if I could only get it to work. Please help!

Lawrence Mee
Eastliegh
Hampshire

Go and stand in the corner and put that dunce's hat on, Lawrence! The text for SUPER CAT is indeed on page 72, but the listing follows on page 73.

Write 500 lines: 'I must scour every single page of Amstrad Action *in case I miss anything!'*

● Technical trauma

I own a CPC464, DD-1 Disk drive, memory expansion and a Multiface II. I have several queries which have accumulated over my life of being a CPC user, and now I'm going to dump them straight on your lap.

1. Is it possible to attach my father's PCW 8256 printer to my CPC by means of a special cable? If the answer is yes, what kind of cable do I need, where can I get it, and how much will it cost me?



● Multifaced screens and *Stop Press.*

2. How can I load screens saved with a Multiface II into *Stop Press*? I've looked through my back issues of *AA*, because I thought that some time ago I saw a listing that converted Multifaced screens into *Art Studio* format, which in turn means I can load them into *Stop Press*. If there was such a listing, could you please reprint it?

3. If the CPC uses a Z80A central processing unit, then why does the CP/M 2.2 utility disk have an 8080 assembler on it, not a Z80 one?

4. Can I run the *Advanced Art Studio* on my CPC with just my Dk'tronics 64K memory expansion, or do I need a 6128 ROM?

If you could answer these questions I would be eternally grateful.

Bálint Joó, Aberdeen

1. No dice I'm afraid. The PCW printer uses a non-standard interface and takes its power from the PCW. I'm sure it could be done, but it's probably more trouble than it's worth.

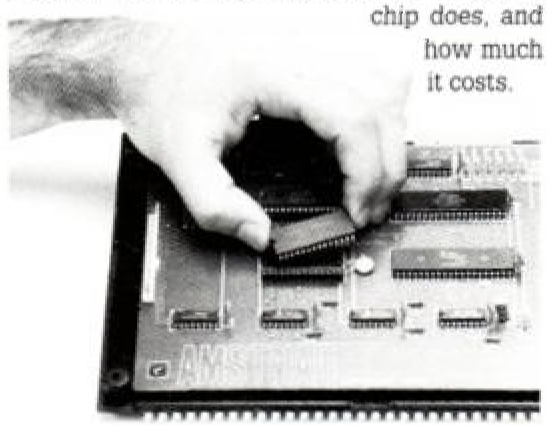
2. See above.

3. The Z80 is an enhancement of the 8080, and will happily run 8080 code. I agree, it does seem a little daft to include an assembler that can only use half of the processor's instructions.

4. Yes. That is, Yes you can run Advanced Art Studio *on your expanded 464.*

● Waste of space

Please could you let me know why there is a space for a chip marked AMSTRAD 40010 in both my 464s. I would like to know what this chip does, and how much it costs.



● A message about unidentified chips – leave 'em

Is there any way I can connect both my 464's together, so I can use one machine with twice the memory?

Brian Callender
Edinburgh

I'd leave it well alone if I were you, Brian. I don't know of any chip that fits the description, it sounds to me like it's reserved for the manufacturer's internal modifications.

Connecting your CPCs together won't double the memory of either machine. Get a 64K RAM pack if you need a 128K CPC.

● Funny you should say that

Could you please help me? I have just recently bought a CPC464 and want to know three things please:

1. Is it possible for me to purchase a modem for my CPC?

2. And also, if I can what is the difference between an internal modem and an external modem (I am very confused).

3. Finally, what would you consider to be the cheapest and best for me to buy?

D P Herring
Sheffield



● Want to know about modems? *AA*'s the place.

We're so on-the-ball here at AA that we've answered your questions before you've even asked them – just turn to page 16 to find the definitive guide to comms and your CPC...

Regarding your query about internal and external modems, you need an external modem. Internal modems are designed to work with IBM PC compatibles, and simply slot into one of the machines' internal expan-

sion slots, by-passing the need to use the RS232 interface, and thereby cutting manufacturing costs. However, all other machines, the CPC included, will need to use an external modem.

● Calling Ruth Starbrook

With reference to the letter in *Forum* from Ruth Starbrook (*AA53*), I have enclosed a CPC464 manual which she is welcome to have. Wish her luck from me, and tell her that when she becomes absorbed in her computer, mealtimes become unimportant!

R Lyons
Liverpool



Thank you for your generosity, I will send the manual directly to Ruth, or I would, if only I hadn't lost her address! So send it in Ruth, and your manual will be with you shortly.

Thanks must also go to D. Hill, Terry Gammon, John Parkhurst and P. Breckin who all made similar offers of help.

● Whist drive

I was recently given a disk drive out of a PCW which looks exactly the same as the one in my CPC 6128. The drive has 26 connectors and four power pins, whilst the CPC has 34. Could you tell me if it is possible to get a lead made up and where to get one from.

S Blease
Manchester

The drive is in fact identical to the one used in the 6128, and so it is perfectly possible to get one made up – try VSE on 01 737 0234 – it should cost you between £10-£15. However, you will also need a power supply to operate the drive. The supply must have both +12 and +5 volts. The electronic surplus people, such as J & N Bull Electrical, tel 0273 734648, should be able so provide this for around £15.

● On the line

Can you tell me why the line gives a 'Type mismatch in 5' error when I try to run it? It is from *Forum* in the January issue of *Amstrad Action*.

```
5 FOR a=&B5A9 TO &B5AD:READ a$:POKE
a,VAL("&")+a$:NEXT:DATA 43,41,54,20,0D
```

D Mitchell
Clacton-On-Sea
Essex

Sorry, one of the brackets has been printed in the wrong place. It should read:

```
5 FOR a=&B5A9 TO &B5AD:READ a$:POKE
a,VAL("&"+a$):NEXT:DATA 43,41,54,20,0D
```

● Great Dane

I am a Danish girl with a CPC6128 and Amstrad LQ5000 di printer, which I have had for about two years. I wanted to change the printer from a Danish character set to an English one. I tried to change the dip switches, with the result that the printer won't work at all now. I can't remember the correct configuration for the switches, and would be extremely grateful if you could tell me the default settings for all three banks, so I can get my printer back to normal again.

With my computer having the Danish character set, I cannot use the backslash "\", which has appeared in some of your listings. What should I use instead?

The command SYMBOL AFTER 32, which often appears in listings causes the error "Improper Argument". Can you tell me what I'm doing wrong?

Inge Botofte
Frederikssund
Denmark

We can't afford expensive 24-pin printers here at the AA office, so if any readers know the dip switch defaults then let us know and we'll let Inge know.

I wouldn't worry too much about which character you substitute for the backslash as they aren't used in actual commands, only in text. A forward slash "/" is what I'd probably use.

The SYMBOL AFTER command will not work if the value of HIMEM has been changed, giving the Improper Argument error. Make sure that you are not using the MEMORY, OPENOUT or OPENIN commands when using SYMBOL AFTER.

● Spaced out

Over the Christmas holiday I had the chance to go over some back issues and remind myself of some of the more subtle hints and tips sent in by your avid readers.

Back in issue 47 there is a letter from A A Cooper complaining of the checksum routines spitting out the wrong numbers due to embedded spaces. This immediately brought to mind the poke I have been using, by which BASIC ensures they do not occur at the time of entering the line.

Type POKE &AC00,1 <RETURN> before you start to enter any listing. Any spaces you accidently insert or add to the end of the line will be removed.

To get rid of all the spaces in a listing that has already been typed firstly use RENUM to get the line numbers into tens, then type AUTO and step through the program, pressing return until finished.

Now a couple for me. When saving a BIN type file there is an optional entry point. If the file is loaded at &8000 why enter at say &8006, and then in this case what happens to the first six bytes?

With the *Protext* and *Prospell* ROMs I have *Utopia* and *Maxam* 1.5 all installed as recommended by Arnor. If I get the Rodos ROM where would the best position be on the board to fit it?

I am hoping to be able to fit a second drive at a later date when funds permit.

By the way, you don't happen to have a spare issue of No22 do you?

Trevor Boyd
Bristol

A machine code program doesn't necessarily start at the first byte of code. For instance, variables may be stored at the very beginning of a block of code, with the machine code entry point immediately afterwards. The data is still loaded in from that address, but the call just jumps to a different place.

Rodos can be slotted into any spare socket on your Romboard that occupies a backround ROM address.

● Deep Joy

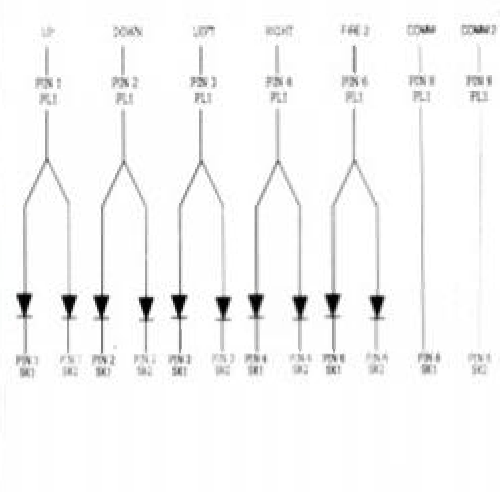
I have the same problem as Les Plumb (*AA52*), the only difference being I have a genius mouse and joystick that I would like permanently connected, to stop any damage to the joystick port.

Being only a recent subscriber to *Amstrad Action* (my loss!), I do not have a copy of *AA33*. I was about to order a back issue of this edition, but notice it's no longer available.

Please can you help – I am on my knees, one finger typing this letter – and that's not easy, it's difficult enough sitting down!

Brian Farrant & 'Arnold'
Doncaster

Okay, I suppose you can be forgiven for not buying AA from the very first issue, so here's a re-print of the schematic connection diagram. You cannot be forgiven for refering to your CPC as 'Arnold' though. This was acceptable in 1986, but now is extremely uncool!



AA SMALL ADS

For Sale

AMSTRAD 6128 Disk Drive with Colour Monitor, Multiface 2, cassette recorder, software worth over £1000 Incs Batman, Powerdrift, Untouchables, Strider, excellent condition £450.00 OVNO. Ring Jason 061 737 1173 After 6.30pm.

CPC6128 Colour Rombox with RODOS ROMDOS, Joystick, Printer Lead, Recorder, 40 disks WP/SS/DTP, games tape and disk, manuals, magazines, offers £350 ONO Tel: Chris 0373 823843 Evenings and Weekends.

AMSTRAD CPC464 and Colour Monitor, 25 Amstrad Actions, 109 games inc Continental Circus, Emlyn Hughes Soccer, and both Game Set and Match games. Worth over £900, sell for £400.

CPC 6128 Mono, Daisy-Wheel Printer, Joystick, serious and games software worth £300+, 40+ magazines. Sell for £280. Contact Trevor Beswick on 0532 580611 during Office hours or 0532 751102 after. All excellent condition.

AMSTRAD CPC 464 and Colour Monitor, Speech Synth, Joystick, Dust covers and over 75 games £200 ONO Phone Peter on 01 868 3922 after 6pm.

CPC 664 Colour Monitor, disk, tape, Speech Synthesizer, games worth over £400, eg. Gunship, Robocop, Joystick, magazines, manual, excellent condition, sell for £350.00 ONO Tel. Andrew 0242 532020 After 3.30pm.

COLOUR CPC 6128 £250 – RS232 Interface £29 – Secondary D/Drive £75 – Wide Printer (Centronics/Serial) £50 – Tasword 6128 £10 – Masterfile III £15 – Cashbook Accounts £20. Games from 50p Tel: 01-361 0422.

AMSTRAD games singles, books for sale. Blank disks for £1.50 AA magazines 7-8 11-14 16-17 19-52 make offer contact Andrew Wong 10 Gerllan Tywyn Gwynedd LL36 9DE. Telephone (0654) 711629 (after 5).

SUPERDISK! Crammed with quality programs including database, Personal-diary, Computer-term dictionary, Digitised Music, real-time analogue clock, graphics and "Arnold" (fun conversation program - includes speech!!) Disk – £6. Cheques/POs to M Ahmad, 43 Hartington Street, Newcastle NE4 6PS.

FIRMWARE manual and other Technical books, DDI-I Disk Drive, Rombo, Rom/Disk software (including Protext, Utopia, Maxam) and games. Send SAE for list. Richard Evans, ST Edmund Hall Oxford OX1 4AR.

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CPC 6128 Mono, Daisy-Wheel Printer, Joystick, serious and games software worth £300+, 40+ magazines sell for £280. Contact Trevor Beswick on 0532 580611 During Office hours or 0532 751102 after. All excellent condition.

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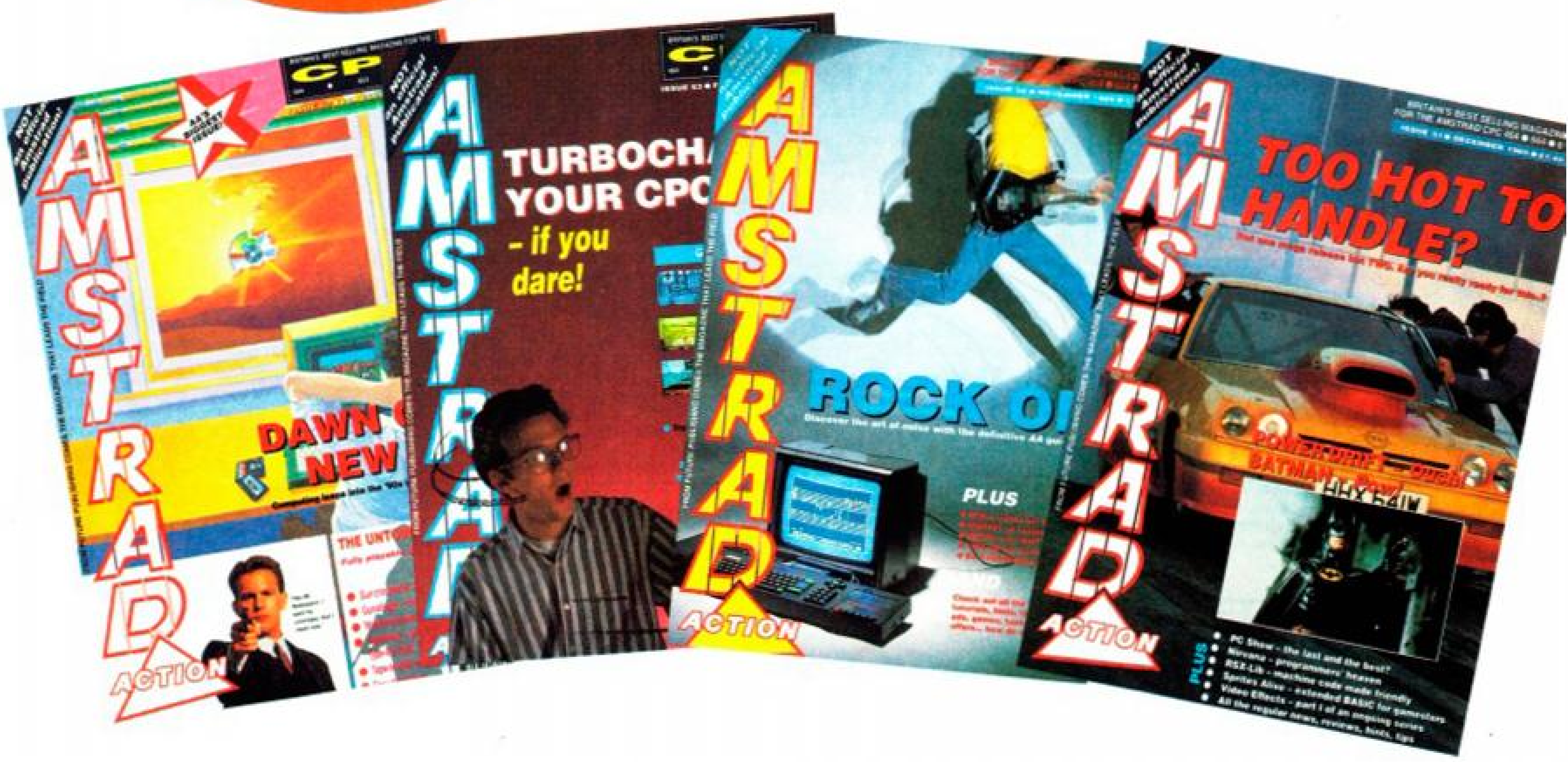
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Mastering MIDI

What do I need? How much will it cost? How do I know which one to buy? These questions and many more answered by JAMES PIMENTEL-PINTO...

As the majority of AA readers are not professional musicians (unless Michael Jackson and Madonna have CPC's – no,I don't think so!), I'm not going to bombard you with meaningless jargon such as sampling resolution, truncation and variable sampling rates unless really necessary!

The basic features of a sampler are universal, no matter what price tag accompanies the machine. Nowadays, there are quite a few reasonably cheap, reliable samplers to choose from.

I am not going to talk about the really cheap "home" samplers which fall in the £50-£200 price range, because I'm assuming those of you looking for a sampler to use at home with your CPC are looking for quality. Although these "cheapies" are fine for the beginner and are an excellent introduction to the world of sampling, in general the sound quality is poor compared with the decent samplers. As well as this, facilities for editing the sample are either non-existent or limited with cheaper products. The majority are also non-MIDI instruments, and therefore could not be used with any of the sequencers reviewed in *AA*50. For those of you who are serious about your music or even in a band, then you want samplers that sound good and that can manipulate the samples easily *and* accurately.

Unfortunately, for a good quality sampler you are looking at £500 and above – but that is the sacrifice you have to make for your music to sound superb. If you combined your CPC (running a good sequencing program such as the Foundation sequencer) with a good MIDI sampler,and a tape deck, you could quite easily produce professional-quality demo tapes.Of course the standard of your music has to be equally good, but a good MIDI set-up with a decent sampler certainly helps you on your way!

The advantage of a sampler over a synth is great. For a start it gives you much more flexibility. You are not limited by the synthesizing capabilities of your machine. Admittedly, a synth that sounds as good as the M1 or Roland D-50 can often equal a sampler in sound quality, but you are still limited.With a sampler you can record any sound you want, the only limit being your imagination.

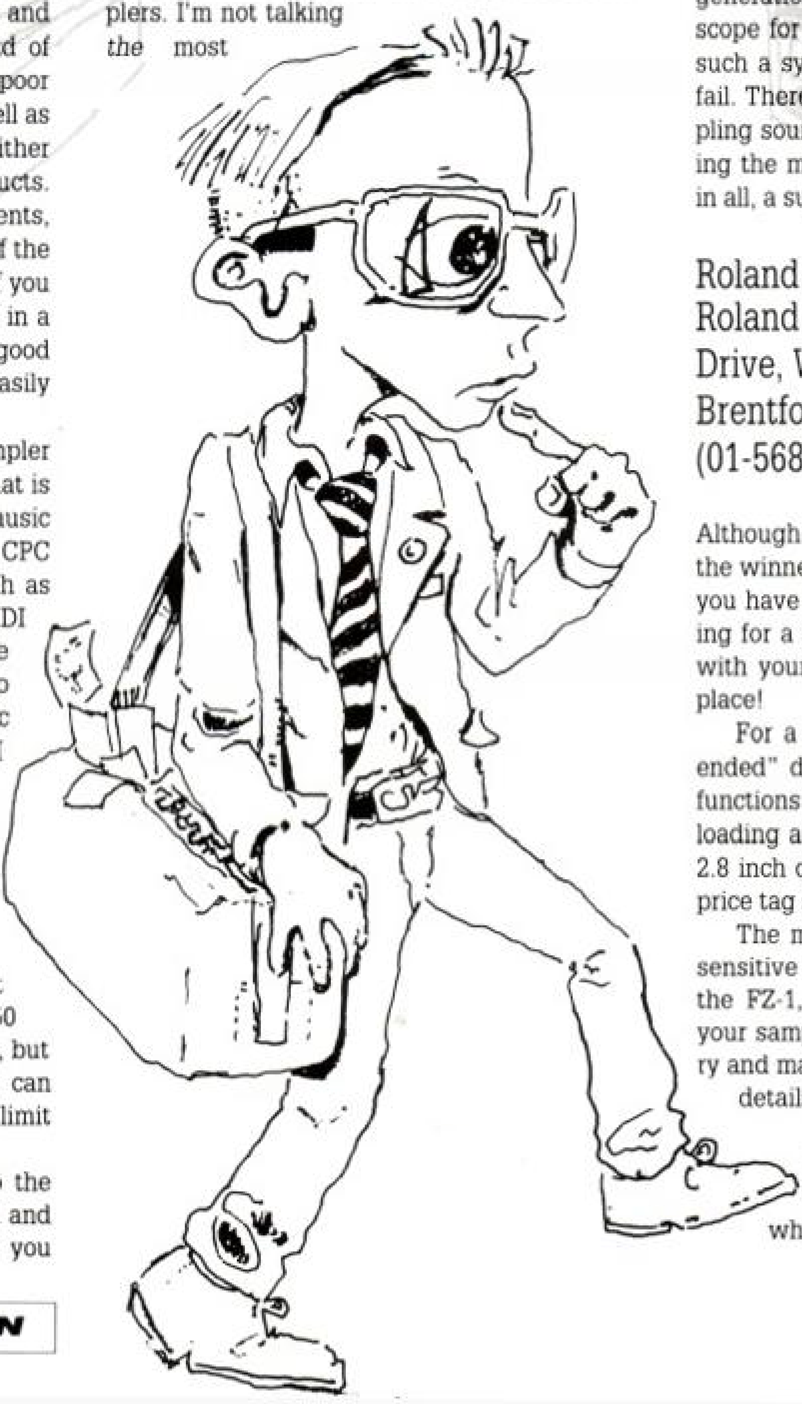
For example, if you were listening to the local orchestra rehearsing in the town hall and you heard a string sound you liked *and* you just happened to have your sampler with you, you could whip out your microphone and sample the sound. (*Er, I'm afraid that's illegal, actually – ed*). Then if it were a slightly more expensive sampler you could save the sound to disk and have it stored permanently.

Samplers also give you originality in your music, because rather than using the same old sounds that everyone else is using, you can create your own unique sounds, such as the sound of a hand grenade exploding in a whoopee cushion factory!

If you want total flexibility, then you have got to go for a sampler that has a LINE IN socket built-in. This socket enables you to plug the sampler, using the appropriate lead, into any electronic sound source, such as an electric guitar, stereo system (*probably illegal*), television (*definitely illegal*) or even a synthesiser. Once connected, you can then sample sounds from any of these sources, not that any of you would dream of sampling from other people's records (*quite!*).

What are the choices?

Well, I'll start with the most expensive samplers. I'm not talking *the* most expensive (Synclaviers, Emulators, Fairlights), but the most expensive in the "reasonable" price range.



Casio FZ-1 Sampling Synthesiser ● £1,400 or less ● Casio Electronics Ltd, Unit 6, 1000 North Circular Road, London NW 2 7JD (01-450 9131)

An excellent quality machine. The synthesiser bit, in simple terms, means you can do lots of exciting things with the recorded data (sample). The FZ-1 has a 5-octave keyboard with full-size keys and polyphonic aftertouch, which means it reacts to how hard you press the keys. It has a 58-second maximum sample time, which is very impressive. It also has a built-in 3.5-inch disk drive for storage of samples and 1 Mb memory for temporary sample storage.

The FZ-1 is, naturally, MIDI-compatible, and sound quality is superb. This is due to the fact that it uses 16-bit sampling, which means that the sample comes much closer to recreating the exact shape of the original waveform – with lower resolution such as 12-bit and 8-bit, much of the fine detail of the original sound's waveform would have been lost.

Another great feature of the FZ-1 is the ability to load optional software to aid sound generation.This open-ended system provides scope for future improvements and the lack of such a system is where many other machines fail. There is also a library of high quality sampling sound disks available from Casio, providing the machine with many superb sounds.All in all, a superb machine – if you can afford it!

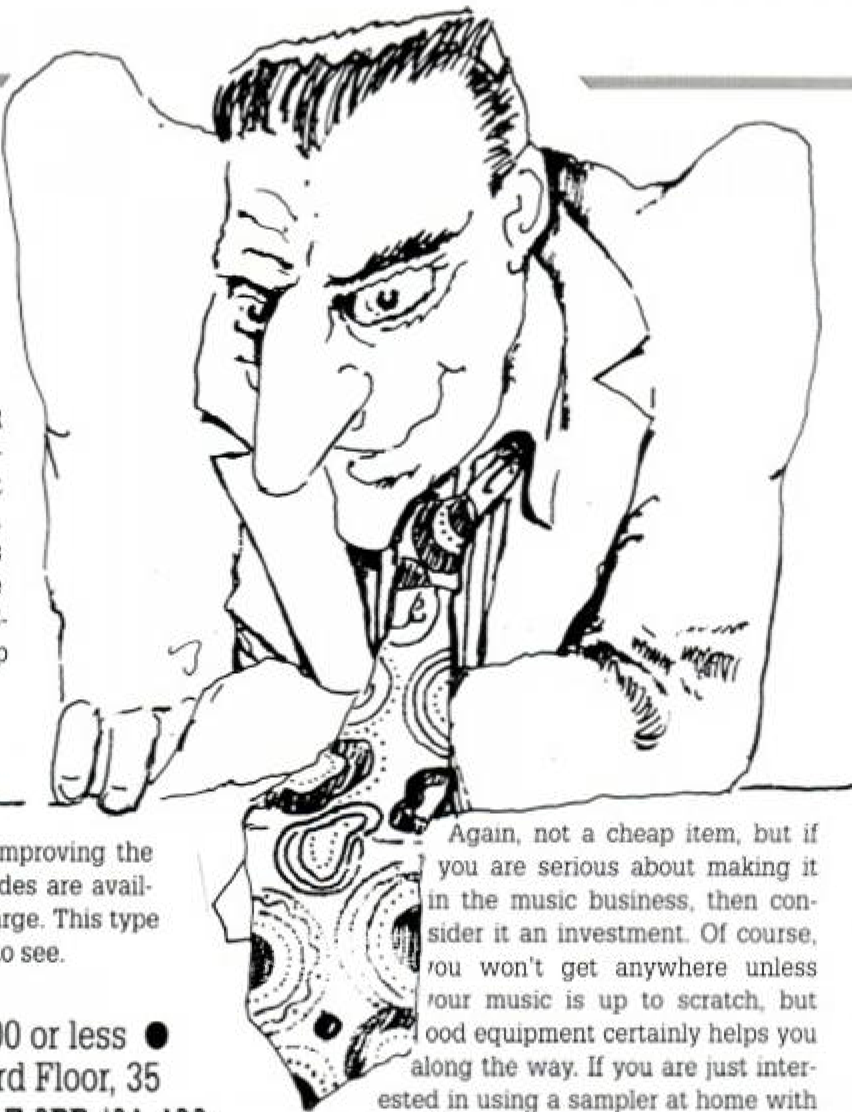
Roland S-50 ● £1,800 or less ● Roland (UK) Ltd, Amalgamated Drive, West Cross Centre, Brentford, Middlesex, TW8 9EZ (01-568 4578)

Although the price label is enough to give even the winner of the Krypton Factor a headache, if you have the money available and you're looking for a superb sampler to use in conjunction with your CPC then you've come to the right place!

For a start, the S-50 has the same "open-ended" design as the FZ-1, in that the whole functions of the machine can be changed by loading a new software disk using the built-in 2.8 inch quickdisk (QD).This almost makes the price tag seem reasonable!

The main sampler has a 5-octave velocity-sensitive keyboard,16-bit resolution (same as the FZ-1, which means the sound quality of your samples is superb), 512K worth of memory and many more of those wonderful technical details I promised not to go into...

The great advantage of the S-50 is its editing facilities. For a start, you can plug in an optional video monitor which enables you to edit your samples



on-screen with the soundwaves being displayed. This is a great help to the amateur and professional alike, making editing almost a pleasure!

Of course you can also do the standard looping, overlaying, editing ADSR envelopes and so on – features which most decent samplers offer. Incidentally, some shops offer the monitor as a free extra when you buy the S-50, so remember to shop around.

The S-50 is continually being upgraded, with Roland adding bits here and there, and improving the sampler even more. Upgrades are available to users at a small charge. This type of back-up service is good to see.

Ensoniq EPS ● £1,100 or less ● Ensoniq UK Ltd, Third Floor, 35 Picadilly, London W1Z 9PB (01-439 8985)

The EPS is commonly known as a "workstation", in that it is multi-timbral and is equipped with what is effectively a 16-track sequencer. Multi-timbral means that it can play more than one sound (in this case sample) at a time. It also has the standard five-octave keyboard, equipped with polyphonic (more than one note at a time) pressure sensitivity. This means it responds to how hard you hit the keys.

The quality of sample achieved by the EPS is excellent by anyone's standard. If you want to hear how crisp and lifelike the EPS's sounds are, go into your local music shop and ask them to demonstrate it for you. It is always worth finding out exactly what a sampler sounds like *before* you commit yourself. It is essential that you find the sampler that *you* like. A trip to the local music shop will tell you more in an hour more than I could explain in a week!

If you are thinking of using the CPC in a MIDI setup for a band, the EPS is ideal for playing on stage (even if it is only the local church hall!). The unique function of the EPS is that you can load sounds (samples) whilst you are playing the sampler. This is an excellent and extremely useful function that will save a lot of time and embarrassment!

If you can't be bothered to sample your own sounds, and you just want to be able to shove a disk in the built-in drive and get jamming, then you'll be pleased to know that there is a huge library of EPS samples available.The EPS is also compatible with another Ensoniq sampler, the Mirage. This gives you access to an additional 2500+ sounds!

All in all,the EPS is a well above average machine, with many addtional features not found on other machines in its price range. Again, not a cheap item, but if you are serious about making it in the music business, then consider it an investment. Of course, you won't get anywhere unless your music is up to scratch, but good equipment certainly helps you along the way. If you are just interested in using a sampler at home with your CPC and you're not looking to become the next Jean Michel Jarre, then go for something cheaper, because the EPS is really a machine for those mad enough to try and make it in the music business.

"I can't afford that! What else is there?"

For those of you with a slightly more realistic bank balance, there are several good quality, no-nonsense samplers available. They're still reasonably expensive, but considerably cheaper than those machines mentioned above.

ROLAND S-10 ● £650 or less ● Roland (UK) Ltd, Amalgamated Drive, West Cross Centre, Brentford, Middlesex,TW8 9EZ (01-568 4578)

The S-10 is the little brother of the S-50. The main difference between the two machines is the absence of visual editing facilities on the cheaper machine. By that I mean you can't plug a computer monitor into the S-10 and see the samples in a nice pretty way.

Otherwise, the two machines are very similar. The S-10 has a 4-octave velocity-sensitive keyboard and a 2.8-inch QD. There is also a digital filter to get rid of unwanted noise from a sample without affecting the sample itself.

The S-10 is remarkably simple to use. I have no doubt that any beginner who has a basic knowledge of MIDI (see *AA*50!) could sit down with the instruction book and have a working knowledge of the machine after about an hour. It really is that simple. If you haven't had any experience with samplers, the S-10 is an ideal instrument. It performs extremely well and some of the samples available from Roland's sample library are outstanding for a sampler of this price! (Especially the choir and harpsichord samples).

The S-10 is an ideal machine for the beginner. Again, it's expensive, but when you consider that you are getting comparable sound quality to the S-50 at over a thousand pounds less, the £650 price tag doesn't seem so bad after all.

AKAI X-7000 ● £700 or less ● Akai (UK) Ltd, Electronic Music Division, Haslemere Heathrow Estate, Silver Jubilee Way, Parkway, Hounslow, Middlesex, TW4 6NQ (01-897 6388)

This machine belongs to the same family as the widely used S-900 sampling module. It is, like the S-10, a standard, no-nonsense machine. The X7000 is also very sinple to learn and has quite a few useful extras. For a start, it can hold 16 samples in memory at once, each selected simply by the press of a button. Each of these samples can be up to 8 seconds long, which although might not sound much, is quite adequate for most needs.

The X7000 also includes an overdub mode which allows you to combine samples. This is a great feature which can turn a good sample into a megasuper-duper one!

Obviously, the sound quaility of the X7000 is not as good as the more expensive samplers. This is due to the fact most of these have 16-bit resolution (explained earlier) while the Akai has 12-bit resolution. Usually, the difference isn't marked, but if you try and sample high-pitched sounds such as a whistle with a 12-bit sampler and then compare the result with that from a 16-bit machine, the difference is quite clear. In some cases, when using 12-bit or 8-bit machines, the sample is nothing like the original sound!

However, unless you have an unhealthy obsession with high-pitched chinese finger-cymbals or you like sampling dog whistles, the X7000 is more than adequate for a beginner. Neither is it by any means a "cheap" machine – I have seen the X7000 being used in an international theatre production to store sound effects!

AND FINALLY...

The samplers detailed here are only a select few. They are the ones I think are suitable for everyone with an interest in this field.

Remember, the only real way of finding the sampler you like is to try each one out at your local music shop.

You may find that your local music shop does not sell some of the more expensive samplers. In this case, a last resort is a trip to London. There are many superb music shops scattered across the capital, including quite a few specific keyboard shops such as The Keyboard Shop at Shepherds Bush. Be careful when it comes to parting with your money, and shop around.

Free for all!

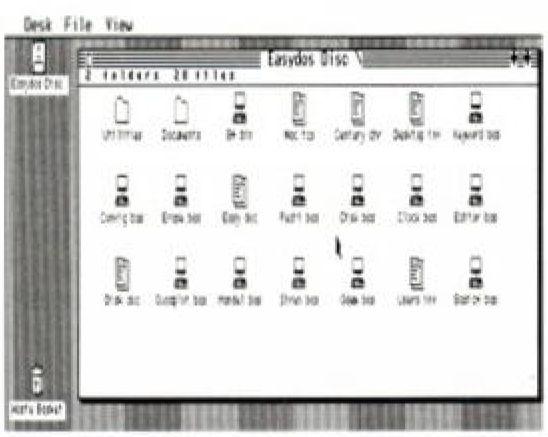
JERRY GLENWRIGHT gets stuck into another gargantuan grab-bag of public domain goodies – including a clever little program that makes your CPC look like an Atari ST...

● Desk

Haven't you ever looked at the Atari ST in the window of your local electronic gadget box-shifter and wished the CPC had an easy to use WIMP GEM interface?

Sure, the CPC command line is fast and powerful, but sometimes, when it's late and you're tired, wouldn't it be nice to just point at a program icon, click, and have the application fire up?

Instead of typing in huge command sequences to get through CP/M's User directory configurations in which you've attempted to sort important files, you could simply open a GEM-style window on any folder and there will



● *Desk*: Atari ST-style front end for your CPC.

be your files and programs, all of which can be run by simply clicking.

DW Software of Withernsea, North Humberside, is a PD library written, owned and run by David Wild. This guy is single-handedly writing his own public domain library – and *Desk*, a quite unreal copy of the GEM front end for CPC micros, must be the flagship of the range. It has to be seen to be believed.

Getting it up and running, *Desk* consists of 22K of BASIC, 7K of machine code – presumably to draw the windows, update the screen and so on – and various configuration and .INF files necessary for the program's operation. There's probably not much more than 50K of code, so you're not going to lose much by including the progam on your disks.

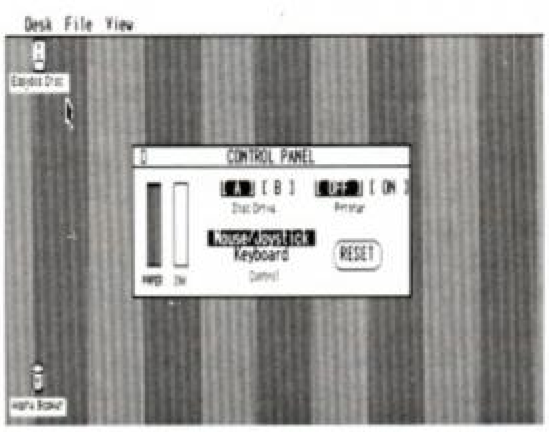
Initialising *Desk* is easy – just type run"desk from the CPC prompt. Within half a second you're presented with a WIMP (Windows Icons Mouse Pointer) desktop on screen. At the very top there's a menu bar with Desk, File and View options, and below that a large window covering the entire screen, with a filing cabinet icon representing disk A in the top left-hand corner, and a dustbin icon representing the wastebasket below it at the bottom of the screen. A pointer cursor is positioned somewhere on the desktop. You can select keyboard, joystick or AMX mouse control for the pointer, giving you the full feeling of GEM.

Clicking on *Desk* in the menu bar (for those of you who haven't used a mouse, 'clicking' means moving the on-screen pointer to a word, icon or whatever and pressing the mouse button to make a selection. Double-clicking involves pressing the mouse button twice and is usually used to run a program), brings up a menu offering Desktop Info, Catalogue, Control Panel and Exit.

The first provides a copyright message and, as the prolific Mr. Wild asserts, "It's useless, but if it's good enough for the ST, it's good enough for me!". Catalogue brings up a window containing an AmsDOS-style Cat of the disk in drive A, showing files, sizes and the like. Control Panel offers control over paper and ink settings so that you can choose the colour of the desktop and text, a printer on/off toggle, drive A or B toggle and selection between mouse, joystick and keyboard control of *Desk*.

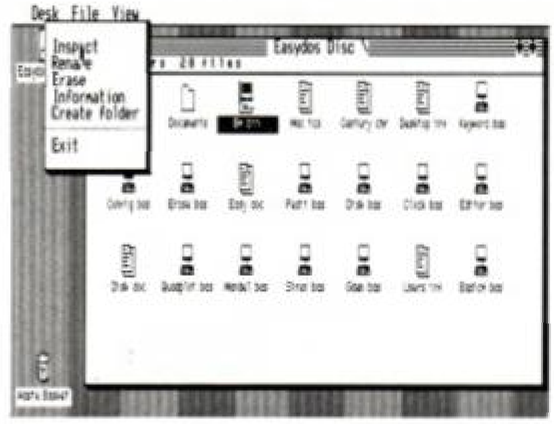
Moving along the menu bar to File, you can inspect (i.e. print to screen) text files, rename or erase files, get information such as start address in memory of programs you've highlighted, their sizes etc.

The final menu bar choice is View. Clicking on this enables you to choose whether to sort files displayed on screen alphabetically by name or by type.



● *Desk* can be configured to work from mouse, joystick or keyboard.

Moving the pointer to the filing cabinet icon and clicking opens a window displaying files present on the disk in drive A (unless you've selected drive B in the Desk/Control Panel menu, in which case the files from drive B will appear). Folders, represented by card index dividers, are tree-like directory structures, which are actually patched into CP/M



● *Desk* lets you carry out a full range of disk housekeeping activities.

User0, User1 etc, code in order to create a true directory structure. And they really work. You can store files such as word processor documents in a folder called WordPro or whatever you wish, programs in a Programs folder and so on, clearing the desktop and making file and program selection quick and easy.

Programs are represented by little 'computer' icons, and text files by paper sheets with lines across them and one corner folded over. If you want to run a program, move the pointer to its icon, double-click the mouse button (...or joystick button or return key or copy key), the screen will clear with the words "loading...filename" on the top line and then your chosen program will be loaded and run.

If you wish to read text files, move the pointer to the desired text file's icon, click once to highlight the file and select Inspect from the File menu – a window will open and the file will scroll through the window. When you've finished reading, click the window to close it and you'll be back at the desktop.

All windows appearing on-screen are high-resolution, extremely professional-looking and fast. If you perform any naughty actions, a window will appear with a genuine ST-like STOP sign and a message detailing the error. The typeface used on the desktop is very similar to that of the ST and the whole thing feels as though – with a litle work – it should have been bundled as a front end by Amstrad, it really is that good.

One moan is that after running an application you're returned to the Amstrad command line rather than Desk, and must run Desk again if you wish to use it. Unfortunate, but jeez, it's free!

Anyway, I have confidence in this guy. If there's enough demand, I just *know* he could write a patch to get the start of *Desk* instead of the Amstrad BASIC screen to be bunged into the correct spot in memory. Can you hear me DW?

If you adore your CPC, but would like it to have smart new coat to wear, then invest a few quid in a disk containing a copy of *Desk* – I guarantee you won't be disappointed, but do it soon, because software houses everywhere are going to snap this program – and it's author – up and pay large sums of money. More programs from David will appear next month.

PD OR NOT PD?

As explained last time, public domain software – PD – is software which the author has said can be copied and distributed freely by anyone. No profit must be made on the software and it must not be changed, nor must any accompanying text information files. Fine. There's a mountain of very useful and very well programmed CP/M machine language programs out there in Biggsville just waiting to be picked up and used by you. This is the software which will form the backbone of your monthly PD column.

However, there's a lot of awfully good BASIC and small CPC-specific programs which, although not public domain, are very cheap – far cheaper than the average budget commercial release – and yet which are very good and should be reviewed by *AA* and used by you.

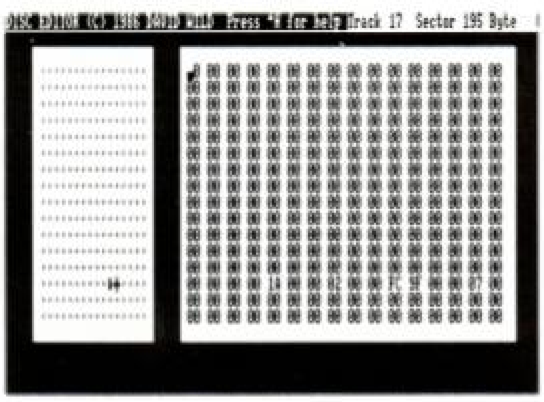
We decided that we simply couldn't let this excelent software slip by without notice and so each month we will give you the low-down on some of these programs too.

Take your pick, enjoy your programs, but remember which is PD and which is copyright. Copy and distribute the former, but not the latter and the authors responsible will love you forever. OK?

● Editor

Or, a comprehensive and technical means of destroying all the data on your disks...

Of course, you'll only destroy disks if you don't know what you're doing, but for those whose lives are spent whiling away the hourstechno-tinkering, Editor provides all the tools necessary to examine and edit disks. You'll thrill to the hexadecimal displays of each sector, shiver with anticipation as you use the cursor keys to move to your desired byte location in the sector and positively glow with satisfaction when you've changed the byte, booted the disk and the program you were tinkering with offers some strange new feature programmed entirely by you.



● *Editor*: Byte by byte file meddling.

Seriously, a disk editor can make a big difference to disks which refuse to load. FAT tables, directories and individual bytes can all be doctored to rescue dying disks. And for adventure enthusiasts, the disk editor will let you examine game disks using the displayed ASCII feature and enable you to discover hidden passwords and cheat modes (use a copy of the original. I can't be held responsible for those who ruin commercial software). *Editor* is written entirely in BASIC and can be found on a PD disk somewhere near you. Don't miss it!



● *Editor*'s keyboard shortcuts.

● Invaders

Enough of the serious stuff. What about a good old blam-session, blasting away at slimy green things (take your finger out of your nose, please...) and putting the Universe to rights?

Invaders, from the WACCI library isn't PD, but it is breath-takingly cheap (i.e. on a disk with dozens of other good programs for six quid) and it's a very good implementation of the first rave computer game. There's something about the tick-tock movement of those pincer-like invader claws across your screen that invokes a primeval urge to annihilate. And annihilate you must, for in this game there's no second chance. Just relentless waves of outlandish creatures crossing your monitor, bent on your blood and the control of your home planet.



● *Invaders* return!

Invaders features smooth-scrolling fast graphics, impeccably-drawn invaders, a hideously-difficult-to-get-into High Score table, sexy spot effects and ear-splitting explosions. Get a copy as soon as possible 'cos all your friends are gonna be firmly locked in their bedrooms playing this game for a long time to come...

● Drip Zone

And now, for anyone who's spent their last few pence banging away at NAME in their favourite arcade comes *Drip Zone*, a NAME lookalike with scrolling as smooth as Emma Freud's thigh (*OK, that's enough – ed*) and more features than you can shake a joystick at.

Drip Zone begins with a stunningly-drawn opening screen accompanied by a digitised rendition of the *Twilight Zone* theme tune, and a little message informing you that there are no "naff scrolling messages in this game..."

WHERE TO GO

● DW Software (We're tracking this man down even as we speak. Give us a call and we should be able to put you on to him.)

● WACCI UK, 9 South Close, Twickenham TW2 5JE. Telephone 01 898 1090. WACCI is a good source for both PD (WACCI PD) and cheap amateur programs (WACCI Homegrown). To find out what WACCI have for you, bung them a couple of quid to the address above and you'll receive a sample copy of the WACCI fanzine. As well as being a good read, this publication contains the PD and Homegrown lists.

● Robot PD Library, 2 Trent Road, Oakham, Rutland LE15 6HF. Probably the only cassette-based PD library in the known Universe, Robot is well worth a stamped addressed envelope if you don't have a disk drive.

● The CP/M User Group, 72 Mill Lane, Hawley, Dartford DA2 7RZ. The best CP/M user group in the country. Lots and lots and lots of PD. Need we say more? A word in the right ear at the above address will gain you access to an enormous quantity of excellent CP/M PD.



● Welcome to the *Dripzone*!

Fine, thinks you, on with the action. You're regaled with some pretty hot digitised speech preparing you for the delights to come, and by the time you get to the game proper, you've already been picked up from the floor twice and had artificial respiration!

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There's a signpost up ahead, you've entered the *DripZone*...

AND THE WINNER IS...

...Simon Matthews, from Woking. His was the first correct entry out of the hat in last month's Spot the Deliberate Mistake competition. As he rightly pointed out, Bill Gates did *not* write CP/M, Gary Kildall did. We just wanted to check you were paying attention.

Naked Video

Tired of the same, boring old screen clearing routines? CONRAD BESSANT shows you how to shrink, squeeze and zoom your pics into oblivion with the CRTC chip...

In games programs the need to clear the screen at some point is almost inevitable, and an interesting method of doing this always adds to a game's 'grab factor'. Although the CLS command provided in BASIC is effective it could never be described as spectacular. This article will therefore explain how to go about clearing the screen in various ways by directly addressing the Cathode Ray Tube Controller (CRTC).

The incredible shrinking screen

The Vertical Displayed Register of the CRTC (register 6), determines how large the screen is vertically. The value sent to it is in character heights, hence it is usually set to 25. Obviously, sending a value of 0 to this register would cause the screen to become 0 lines high, i.e. the display would not be visible. The following example will do this:

```
OUT &BC00,6 'Select register 6
OUT &BD00,0 'Send 0 to this register
```

As with other CRTC operations, the display is still intact in RAM, so by sending the value 25 to register 6 the display will be recovered:

```
OUT &BC00,6 'Select register 6
OUT &BD00,25 'Send 25 to this register
```

This is not really an improvement on typing CLS, apart from the fact that the screen can be recovered, but by slowly decrementing this register the screen appears to be 'rolled up' until nothing is left.

The following program will demonstrate this:

```
10 BORDER 11
20 FOR height = 25 TO 0 STEP -1
30 OUT &BC00,6
40 OUT &BD00,height
70 CALL &BD19
80 NEXT height
```

As in the example above, the screen image is still stored, so it can be brought back by sending 25 to register 6. However, a more impressive effect would be to bring the screen back in a similar way to the above. To do this we must add the following lines to our program (put the screen back to normal with OUT &BC00,6:OUT &BD00,25 first to make typing easier).

```
100 FOR height = 0 TO 25
110 OUT &BC00,6
120 OUT &BD00,height
150 CALL &BD19
160 NEXT height
```

As you can see, the screen is first cleared and then recreated. A GOSUB command could be inserted at line 90 (i.e. while the display is momentarily not visible) to call a routine to prepare a screen ready to be displayed, but for the time being we can just use a CLS, to provide an unusual way of clearing the screen.

The MC WAIT FLYBACK call (CALL &BD19) causes the computer to wait until it receives a signal telling it that frame flyback is occuring (i.e. the screen is momentarily not being written to). The calls are used in this program partly to synchronise the addressing of the CRTC with the monitor, but mainly as a way of slowing the program down to increase it's visual effectiveness. If you like you could try taking these calls out to see just how fast direct CRTC addressing is (but don't forget to put them back in before continuing the program!).

In the program as it stands the display disappears towards the top of the screen – however, it is not too difficult to make it go into the middle. The way we do this is to move the whole display down gradually while it is being cleared so that the top ends up being in the middle of the screen. This is done with the Vertical Sync Position register (register 7), which we used last month to produce a 'wobble' effect. This register determines the position of the display vertically on the screen. By incrementing its contents the display can be moved up, whereas decrementing it will cause it to drop. The normal value of this register is 30, so to make the display fall by one character height this should be set one less than this (29). Adding the following line will move the screen down by 1 character height for every two reductions in the height of the display.

```
50 OUT &BC00,7
60 OUT &BD00,30-INT((25-height)/2)
```

This now gives us a fairly smooth screen clearing routine into the middle of the screen. However, when the screen reappears it's uppermost limit is still the middle of the screen. Remedying this problem is fairly simple, as all we need to do is move the screen up in a way similar to that which we used to move it down. Adding the following lines will do this.

```
130 OUT &BC00,7
140 OUT &BD00,30-INT((25-height)/2)
```

Again, the screen image is still stored in RAM, so if the CLS (line 90) is taken out the display will be recreated.

As wide as it's tall

For each vertical register in the CRTC there is a similar horizontal one, and indeed the two registers used in the examples above are complemented by the horizontal display register and the horizontal sync position register (numbered 1 and 2 respectively).

This means we can write a similar program to the one above to clear the screen horizontally rather than vertically.

The Horizontal Displayed Register holds the width (in CRTC character widths) of the screen. The normal value of this is 40 in all modes because, unlike a text character, a CRTC character is the same size in every mode. To clear the screen using this register all we need to do is decrement it until it reaches zero, as shown below. Don't forget to save or NEW the last program before you begin this one, though:

```
10 BORDER 11
20 FOR width = 40 TO 0 STEP -1
30 OUT &BC00,1
40 OUT &BD00,width
70 CALL &BD19 80 NEXT width
```

Although the program structure is identical to that of the vertical example, you will notice that the screen display seems to swirl around as it disappears. This is because the CRTC displays the characters left over from the end of the first line on the beginning of the second line, and so on all the way down the screen.

As in the first vertical example, the screen does not clear towards the middle, and just as the vertical sync position register was used before, the horizontal sync position register can be used to overcome this problem. The horizontal sync position register determines the positioning of the display horizontally on the screen and is addressed in CRTC character widths.

Increasing this value moves the entire display right while decreasing it moves it left, so we can make the screen clear towards the middle by moving the whole screen right whilst it is being made smaller.

Adding the next two lines does this (put the display back to normal with OUT &BC00,1:OUT &BD00,40 first):

```
50 OUT &BC00,2
60 OUT &BD00,46-(20-INT(width/2))
```

Just as in the vertical example, the screen can be recreated by reversing the loop.

Into the Black Hole...

These two programs can be combined to give a 'Black Hole' effect where the screen appears to be sucked into the centre of the screen, and because these effects leave the screen RAM intact it is possible to eject it back out. The program to do this is shown below. Although it looks complicated it is just the horizontal and vertical screen clearing programs running simultaneously. You can probably pick out some lines which are similar to those in the examples above.

If an error occurs in a program like this it is sometimes difficult to find out what's going wrong as the display may not be visible when error messages occur. To overcome this problem, line 10 sets up function key 0 so that it will return the display to normal when pressed:

```
10 KEY 0,"OUT &BC00,1:OUT &BD00,40:OUT
   &BC00,2: OUT &BD00,46:OUT &BC00,6:OUT
   &BD00,25: OUT &BC00,7: OUT
   &BD00,30"+CHR$(13)
20 '
30 BORDER 11
40 FOR f=40 TO 0 STEP -1
50 FOR g=0 TO 11:NEXT g
60 OUT &BC00,1:OUT &BD00,f
70 OUT &BC00,2:OUT &BD00,46-(20-
   INT(f/2))
80 OUT &BC00,6:OUT &BD00,25-INT((40-
   f)/1.6)
90 OUT &BC00,7:CALL &BD19:OUT &BD00,30-
   ((40-f)/3.2)
100 NEXT f
110 '
120 CLS
130 '
140 FOR f=0 TO 40
150 FOR g=0 TO 11:NEXT g
160 OUT &BC00,1:OUT &BD00,f
170 OUT &BC00,2:OUT &BD00,46-(20-
    INT(f/2))
180 OUT &BC00,6:OUT &BD00,25-INT((40-
    f)/1.6)
190 OUT &BC00,7:CALL &BD19:OUT &BD00,30-
    ((40-f)/3.2)
200 NEXT f
```

This program could either be used as a subroutine to simply clear the screen or alternatively you could call a routine from line 120 (while the display is not visible) to prepare a screen which would then be ejected out onto the display area. If you want to include this routine in a machine code program you will of course have to write a machine code version of it. This is fairly simple to do using the method for addressing the CRTC explained last month.

The general approach to developing this routine can be used when writing your own video routines, and the registers used in this article can be used in a wide variety of other effects.

Next time we shall be looking at possibly the most famous video effect – scrolling.

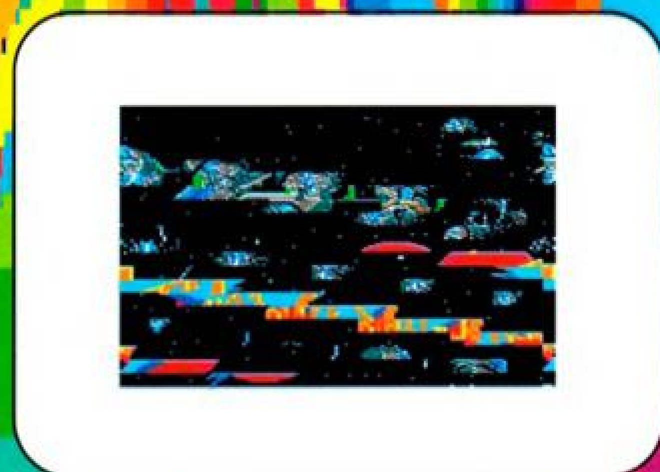
● By simultaneously decrementing the height in the Vertical Displayed Register and the width in the Horizontal Displayed Register...



● ...and at the same time moving the whole screen up and to the right...



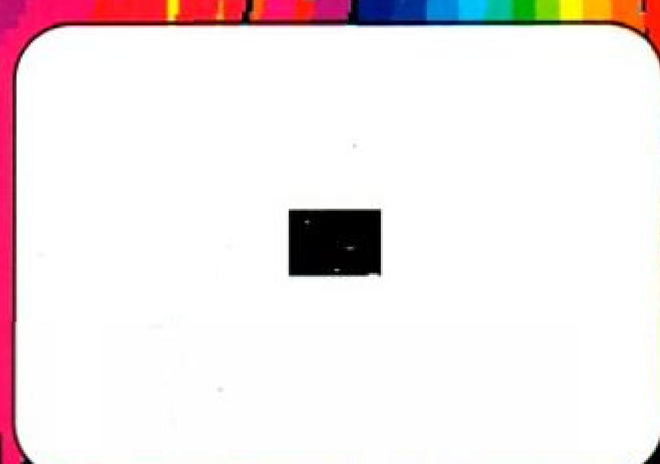
● ...it's possible to make it shrink smaller and smaller towards the middle of the screen...



● ...shrinking away to the point...



● ...where it disappears altogether!



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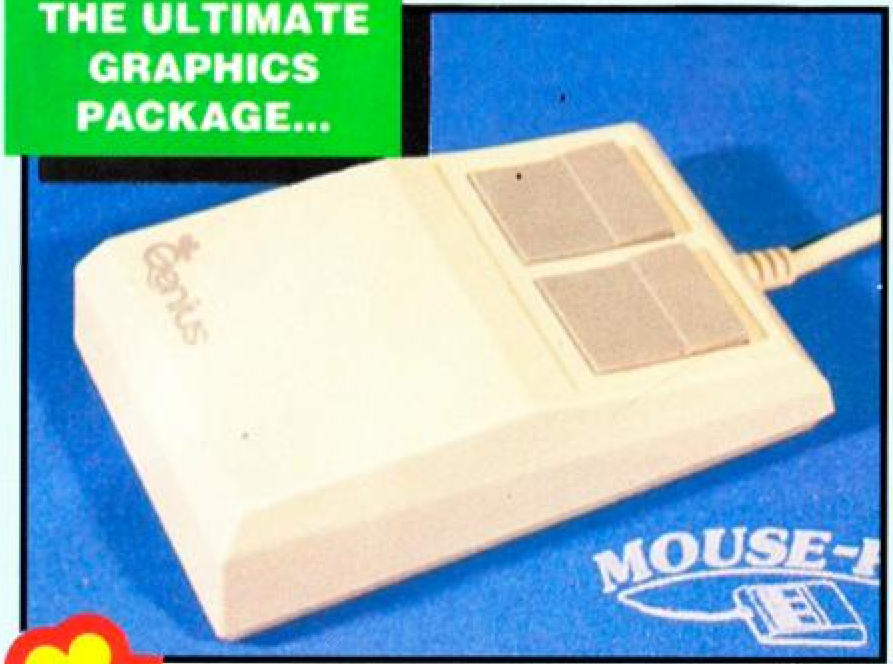
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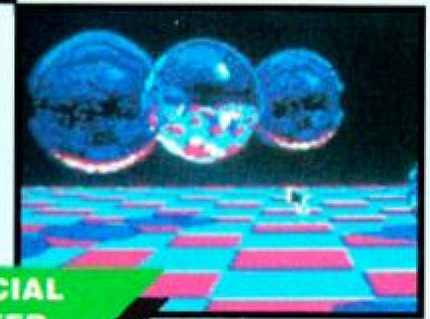
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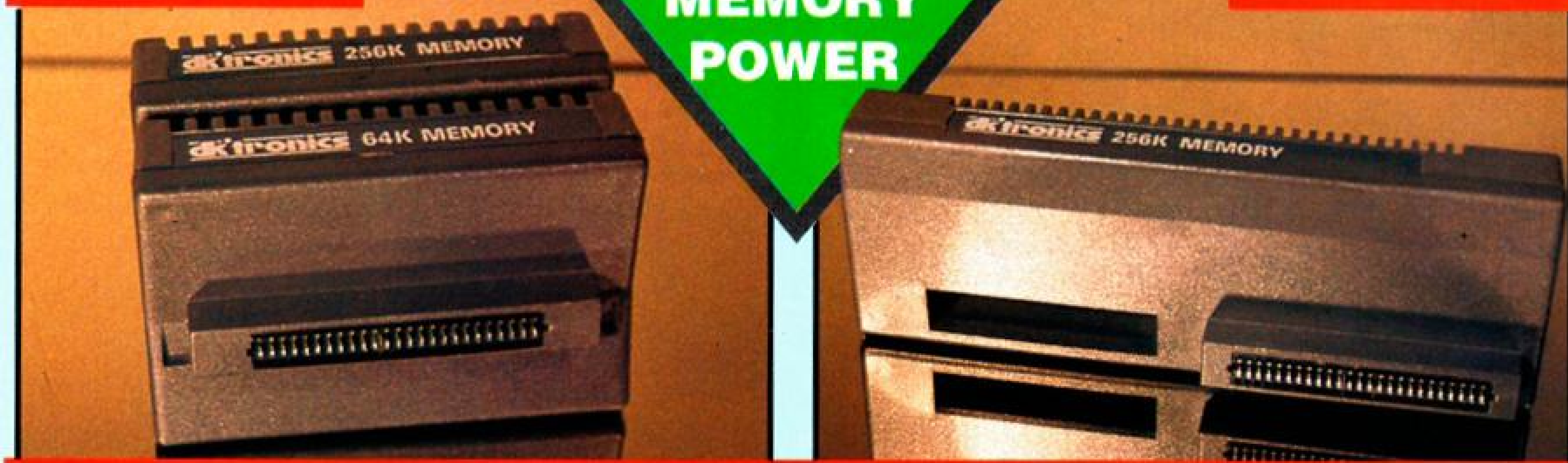
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Cracking the code



Trouble with sums in machine code? MICHAEL GLEDHILL explains how it all adds up, and starts off his programmers' toolbox...

Welcome back, fellow programmers. This month we're going to deal with calculations in machine code. There's also a routine to get your toolbox of routines started. The routines in toolbox are Public Domain, so get typing!

The numbers game

So onto calculations. Love 'em or loathe 'em, you just can't avoid using some kind of calculating – machine code is based around (and made up of) numbers, so to get the most out of it, you've got to understand the basics.

Consider the four main mathematical functions: addition, subtraction, division and multiplication. The first two are simple in machine code: ADC, ADD, SBC and SUB can do just about everything you'd want to do in that field. But then there's division and multiplication...

I'll deal with multiplication first. Consider the expression 7*10. What does that mean? It does the same as 10+10+10+10+10+10+10. Aha – we're back to addition! From there, it's just a matter of using ADD and ADC sensibly.

If you're still lost, stick to using the routine below, which will calculate DE*BC, and store the answer in HL.

```
Entry : DE & BC : Two 16 bit numbers to multiply
Exit  : HL : Answer to cal culation

       LD   HL,&0
       LD   A,D
       OR   E
       RET  Z
loop:ADD    HL,BC
       DEC  DE
       LD   A,D
       OR   E
       JR   NZ,loop
       RET
```

TABLES REVISITED

The tension mounts, the gold envelope is ripped open... and this month's winner of the £25 note is Adam Todd from Lochgelly. The £25 will be winging its way to you on the next available carrier pigeon, Adam.

He wrote in concerning a use of tables I avoided ("forgot" doesn't apply to us geniuses). He's used a table to store the screen addresses of the 200 rows of bytes on the screen. This is particularly useful when you finally realise that the firmware print routines are too slow and that it's time for you to write your own.

The first program will create the table of 400 bytes (200 words). To get the address of a certain line down, use program 2.

Anyway, here's Adam's listing:

```
       LD   DE,table
       LD   HL,&C000
       LD   B,&19
next :PUSH  BC
       PUSH HL
       LD   B,&8
loop :PUSH  BC
       LD   A,L
       LD   (DE),A
       INC  DE
       LD   A,H
       LD   (DE),A
       INC  DE
       LD   BC,&800
       ADD  HL,BC
       DJNZ loop
       POP  HL
       LD   BC,&50
       ADD  HL,BC
       POP  BC
       DJNZ next
       RET
table:DEFS &190    ; Space for 200 words
```

PROGRAM 2 : Accessing one of the screen addresses

```
Entry : A holds row (1 to 200)
Exit  : DE holds screen address
       LD   HL,table
       DEC  A
       ADD  A,A
       LD   E,A
       LD   D,&0
       ADD  HL,DE
       LD   E,(HL)
       INC  HL
       LD   D,(HL)
```

TOOL BOX

The idea behind a toolbox is that when you're writing a lengthy program, you can save time by not rewriting the boring routines, such as printing characters, setting the palette etc, by having these routines written and debugged in advance.

This routine will print a 16-bit number as a 5-digit decimal:

```
Entry : HL holds number to print
Exit  : HL,DE,AF,B are corrupted

       LD   DE,10000
       CALL count
       LD   DE,1000
       CALL count
       LD   DE,100
       CALL count
       LD   DE,10
       CALL count
       LD   DE,1
count :LD   B,&0
loop  :AND  A         ; Clear the carry flag
       SBC  HL,DE     ;  before using SBC !
       JR   C,endbit
       INC  B
       JR   loop
endbit:ADD  HL,DE
       LD   A,B
       ADD  "0"
       JP   &BB5A
```

See if you can write a routine to do the opposite – if I type in five characters, it'll convert them into a 16-bit number.

There's a listing in *AA27*'s *Problem Attic* if you get stuck.

Simple enough, isn't it ? Notice the RET Z instruction, as without this, if DE was zero, the routine would calculate BC*&10000, as it would take 65536 DEC DEs to get DE back to zero.

This routine isn't perfect, though – if DE*BC equals a number bigger than &FFFF, you're left with a relatively useless number due to overflow. If you need a specialized multiplication routine, you'll have to modify the program above, although in most cases, the routine will satisfy your needs.

The great divide

Now, let's do division. How would you attempt to calculate HL/DE? The best method is to subtract DE from HL, and increase a counter, until HL is less than DE. This will leave HL as the remainder.

The following routine will do this. BC is our counter, and the result of HL/DE will be BC remainder HL.

CARRYING THE FLAG

One thing to note about some of the addition and subtraction commands is that they add or subtract "with carry". In fact, you can't subtract two 16-bit registers WITHOUT using the carry flag. So what on earth does it mean ?

Suppose you have an instruction SBC A,&52. What'll happen is that &52 is subtracted if the carry flag is unset, and &53 is subtracted if the carry flag is set. This explains why it is ALWAYS a good idea to have AND A before each SBC instruction in which you don't want to use the carry flag.

But why do you need this? Well, these commands can be quite useful, particularly when you want to add two 16-bit registers without having to push one of them. I'll leave you to ponder on that thought with this example.

Both programs want to add &1234 from HL, but all of the other 16 bit registers are in use, but the accumulator isn't.

The slow version:

```
PUSH BC
LD   BC,&1234
ADD  HL,DE
POP  BC          ; 42 T-states
```

The faster version:

```
LD   A,L
ADD  &34
LD   L,A
LD   A,H
ADC  &12         ; Add &13 if overflow from L
LD   H,A         ; 30 T-states
```

```
     LD   BC,&0     ; Reset counter
loop:SBC  HL,DE
     JR   C,end     ; If HL<DE, goto "end"
     INC  BC        ; else increase
                      counter
     RET  Z         ; If HL=0, calculation over
     JR   loop
end :ADD  HL,DE     ; This will make
                      HL=remainder
     RET
```

Now it's time to come clean. In normal use, you won't use those routines, apart from converting to and from decimal and hexadecimal. Why? Well, in normal use, you'll be able to get by just rotating variables (the CB bb commands), as machine code deals mainly with binary numbers, and you'll mainly need to multiply and divide by powers of two.

For example, 13*4 can be reduced to :

```
LD   A,13
ADD  A,A     ; A=13*2
ADD  A,A     ; A=13*4
```

(Note that ADD A,A has the same effect as SLA A, but is slightly faster and takes up half the number of bytes.)

Division can also be reduced. For example, the expression 34 divided by 8 could be reduced to :

```
LD   A,34
SRL  A
SRL  A
SRL  A
```

Which would give us the expected answer of 4. The remainder of 2 is "lost" through the carry flag.

Those two routines may appear to be relatively useless, but you'll find you'll be using routines like it constantly when performing calculations.

You can consult *AA*32 for a routine to multiply two signed numbers together, and *AA*31 for a routine to multiply two eight bit numbers.

But that's as far as you'll need to go as far as calculations are concerned.

Next time I'll attempt to explain the basics behind scrolling, be it good, bad or The Great Escape.



● Reginald approached his first machine code tutorial with some trepidation...



MATHS MANIA
Biology I
SCHOOL SOFTWARE
BETTER SPELLING
Physics I
SCHOOL SOFTWARE
MAGIC MATHS

ACTION TEST

Guided missiles in World War II? TRENTON rewrites history

"Stuff history let's fight!"

P-47 Thunderbolt takes off on page 42. It's Firebird's latest, but is the greatest?



AA RAVE! RAVE!





● Eddie Murphy hits LA in *Beverly Hills Cop*. A 48-hour wonder or Tynesoft's Golden Child, see for yourself on page 45.



● The car sim season draws to a close with *Chase HQ*. A *Powerdrift*-basher or are they Oceans apart? Race to page 40 now!



● Incredible but true! The *Ninja Warriors* fight their way onto page 52.

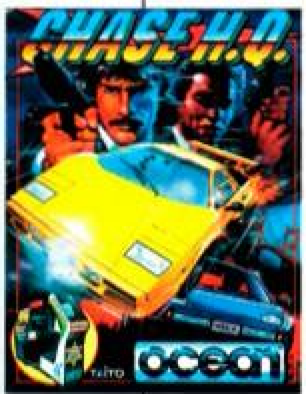


● The arcade extravaganza *Galaxy Force* hits the CPC, but is it just *Afterburner* in drag?

Also reviewed

CHASE HQ

Ocean ● £9.99 cass, £14.99 disk
joystick/keys



"Let's go Mr Driver...!". You've got a shiny new Police Porsche 928, a turbo just waiting to guzzle fuel and Nancy, the nagging receptionist, egging you on. Ralph, the Idaho Slasher, has been sighted in your neck of the woods and his knife-wielding antics must be stopped permanently. He'd rather see life from behind the wheel of his ultra fast sports car than behind bars, so you've got to catch him, ram him and nick him.

A brief report flashes up on your in-car monitor, detailing the perp and their vehicle. The lunatic co-driver yells some banal phrase in your ear and it's time to shape up and ship out. The first objective is to find the guy, and since you've only a limited amount of road to play with, speed and collision avoidance are your main priorities.

The road stretches out ahead, while at the top sit all your important dials and switches. The turbo counters are at the base of the screen, revealing how many of these three fun-packed little babies have been burned off already. Driving has never been easier. With either keys or joystick all you have to do is point and shoot. Key commands are needed for gear changes and turbo, but that's all.

That, however, is only half the story. The car is nimble and quick to respond to any change in direction and speed. And all the time, sat staring out of the keyboard, is the fabulous 'turbo' button, just daring you to press it – and if you give in, you'd better be prepared for the ride of a lifetime. An ominous whine is heard, and then the whole game hits overdrive. You hurtle into the screen with other cars and obstacles hardly visible, let alone avoidable. This baby really shifts, the effect of your boost more akin to a blast of nitrous oxide in your carbs than turbo – the effect is that pronounced.

So, pull out of that lay-by and get on the road. Rev it and rip it up, accelerating down the highway dodging those other losers who can't match your speed. Life's pretty straightforward until you get a hint from a huge yellow arrow that it really would be advantageous to take the right-hand lane of the fork. Tumbleweeds and crash barriers occasionally hinder your progress, but a squeeze on the gas pedal soon has them jumping magically out of the way.

AA RAVE! AA RAVE! AA RAVE! AA RAVE! RAVE!

There's always the tunnel to contend with as well, of course, but after a few trips through the darkness scraping the paintwork of your 30 grand patrol car you soon get the hang of this chase business.

If you make the set distance in time, then your siren starts to flash and you're on the hunt for the big blue nasty. The aim here is to lock fenders with your opponent and force him onto the side of the road. The only way to do this is repeated ramming or side-swiping, slowly beating the other car into a smoking, burning heap.

It's best to save all your turbos 'til you come to blows, as all the criminals are slippery little customers to say the least, and fast to boot. There's nothing more satisfying than charging into the back of your enemy at 400 mph, because as soon as you bounce off, you race back to mash their tail.

After the damage becomes terminal you see your co-driver's arm shoot out of the window and direct the perp to a stop. The level's complete, any extra time is added up as bonus and you're congratulated by the fearsome Nancy. Fail, and all you hear is her sarcastic "Your time's up!" – the game's over and a judgement is passed on your performance. If Nancy likes you, it's possible there'll be a credit – but there seems to be little logic behind their award so don't rely on them.

If you make it to the next mission you'll not be surprised to find exactly the same again, only with a different backdrop and criminal. First it's a blast across the open countryside – desert this time – followed by a crash and bash session with a yellow mobile.

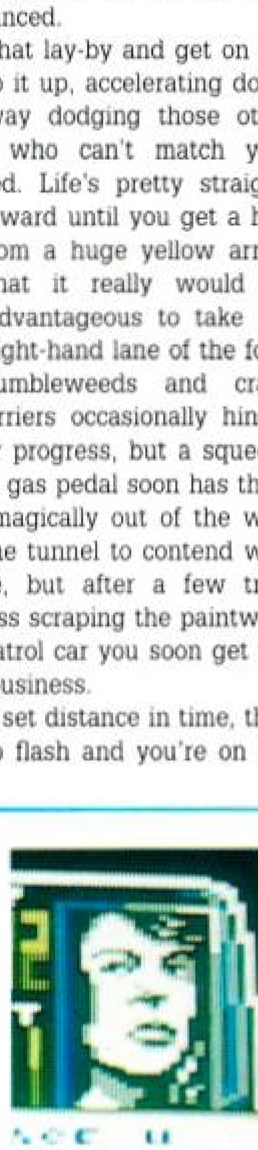


● It's of into the desert for the start of Level Two.

NANCY BOYS!

In every *Chase HQ*-er's life a little rain must fall, and its name is invariably Nancy. She is the character in the control booth back at the eponymous *HQ*, who keeps buzzing you on the radio to let you know things are going wrong, mistakes have been made or – worst of all – "Your time's up!"

Across the top of the screen during the game scroll messages from the lovely little lady. She seems to have no idea how hard it is to put these evil law-breakers behind bars and only ever serves to bring you down. If you fail to make an arrest she is the one who judges your performance. Can you withstand her acid-tongued "You've picked the wrong job, you'd better check the classifieds!" or the deadly "You're a mediocre driver, see you later!"? The most dreaded thing of all though must be the message "If you keep messing around you're going to run out of time", a little snipe that always seems to appear when there's 10 seconds left on the clock and you've got 120 miles to go. She is, after all, supposed to be on your side!



SECOND OPINION

Fast and furious, the high-speed action of Chase HQ sets your adrenalin racing. Ramming the bad guys off the road is fun, and makes this game a real smasher! **AW**

GREEN SCREEN
Tolerable but not good.

The toughness comes from distractingly pretty graphics – such as a helicopter which hovers overhead momentarily – and ever more tortuous roads and obstacles to clear.

Graphically, you couldn't ask for much more from an arcade racer. The roads are easily followed, the other cars are clear and all too solid . Things only become suitably confusing when the turbos are on and you're approaching escape velocity. There are plenty of incidental graphic tricks to keep you amused, like the motor nearly taking off when



● Criminals are identified by the huge yellow



● Nancy gives you the low-down on Ralph.

cresting hills at high speed and the massively unsubtle yellow arrow telling you where to go. And all at a speed and smoothness that puts the vast majority of car games to total shame.

There may be no music but there's a whole batch of synthesised phrases to hear and that lovely turbo whine when you're in full flight. Add this to the cutting messages Nancy keeps sending you and you're bound to be impressed with its thoroughness.

Chase HQ is fun of the highest calibre. It manages to combine high-speed craziness with enough bumping and boring to keep anyone happy. Gripping graphics and fun sonics fill the game out to make much more than just another racer game, with the gameplay switching between speed trials and pursuit. The life of such a game may be short but in that time it will fullfill all your racing dreams. You'll find yourself manically pressing the turbo button time and time again for one more hit of pure thoroughbred horsepower before Nancy's whiplash tongue starts cutting too deeply into your pride. TW

GLITTERING PRIZE

Chase HQ **recently carried off the prize for the best arcade conversion of the year on 8-bit formats. This title is no hollow name for Ocean to drop a dinner parties. In a national computer industry survey everybody who saw it was knocked out with its graphics, speed and smoothness. Ocean can now add an *AA* Rave to its trophy cupboard, as unlike the Oscars the best man, it appears, did win!**



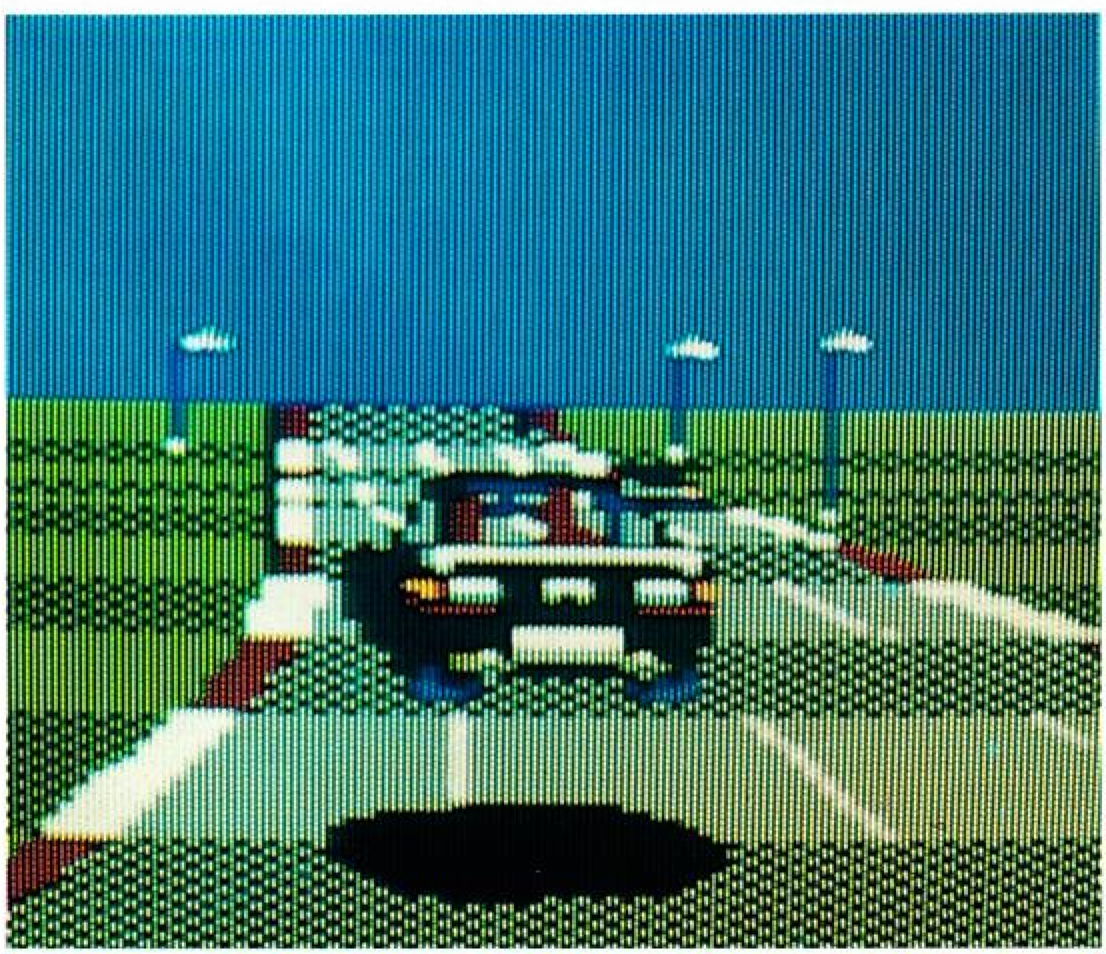
● The airborne patrol often lend a hand on Two.



● The Slasher's finally stopped on Level One.



● There's light at the end of the tunnel, but the chase is still on!



● Airborne antics with the *Chase HQ* crew. Take a hill too quickly and your stomach hits the roof!

FIRST DAY TARGET SCORE

Capture the Slasher

The Verdict

GRAPHICS 91%
- ☐ Excellent roads and cars.
- ☐ Oh, the speed of it!

SONICS 85%
- ☐ A game that talks back.
- ☐ No tune but good effects.

GRAB FACTOR 87%
- ■ Standard road game to begin with.
- ☐ Deliberate ramming is the great bonus.

STAYING POWER ... 70%
- ☐ Drive and crash all day long.
- ■ May get slightly repetitive.

AA RATING 90%
- ☐ A stunning arcade conversion.

P-47 THUNDERBOLT

Firebird ● £9.99 cass, £14.99 disk · joystick/keys

Firebird's latest CPC blast won't win any prizes for historical accuracy, what with a WWII fighter plane fending off missiles and helicopters... but do we care? Stuff history, let's fight.

The action is immediate. As soon as your plane scrolls onto the screen, in screech German fighters eager to prang your kite. So spit on that trigger finger and join the fun because you're faster and more mobile than they are. First come the standard fighters, followed by helicopters, missiles, ack-ack guns, tanks and trains. You fly horizontally across the screen spreading German wreckage all over the countryside, blasting anything that moves into your path. The Op' entails destroying eight enemy big boys, but you've got to battle your way to them first!

The plane's standard blaster is a forward-firing burst cannon, but that doesn't last for long. Soon you'll get a chance to blast one of the 'choppers, pick up its power-up pod and gain a special weapon. It could be anything from missiles to bombs to directional death frisbees. These are great fun and are retained until the next power-up, regardless of dying in the meantime. So grabbing anything on offer is an absolute necessity.



● The P-47 is attacked by both planes and tanks.



● Using the bombs at the start of Level Two.

The first level sends you on a low-level raid, your mission being to blow a train from its rails (*hope you're listening BR – ed!*). Whole wings of fighter aircraft swarm around, trying to intercept you before the target. To make matters more fraught, tanks and gun emplacements fire up at you, helicopters hover blocking your flight path, while the undulating ground proves to be a perilous, ever-present enemy.

Using the special weapons you eventually make it to the train, having picked up a consignment of 'tall boy' bombs just before it chugs into view. This ain't no run of the mill 125, though. Those nasty Nazi's have tooled Thomas up with mobile anti-aircraft guns, capable of sending out waves of hostile rounds. There's one safe position, however, where you can sit to drop your payload and their weapons can't touch! Send the train to the scrap yard and you're on to the next mission.

Here your task is to catch a giant bomber and send it crashing down in flames, but the big danger is breathlessness not the superfortress. The whole level takes place above the clouds, with the rising sun in the background. Parallax cloud scrolling and vivid use of colour make this a level to remember. The game's as tough, with ever more fighters flying at you, and bigg-ish mid-level guardians disguised cunningly as bombers.

It's the missiles here that cause the palms to sweat. Shortly after the battle commences, in fly literally hundreds of horizontal heat-seekers looking to catch you out with their sheer pace. Later, a flight of SAMs break through the clouds, racing diagonally across the screen and forcing you once again to work out where on the screen the one safe haven lies.

The final showdown with the bomber doesn't quite live up to the earlier promise of the level, but, by this stage you're glad of a rest. Level Three is more ground attack, with different backgrounds, targets and airborne antagonists. The weapons stay the same, but the amount of anarchy gets ever more intense, and survival even less likely, for this and the following five levels.

The challenge of *P-47* comes from the speed of the scrolling, and the quickness of

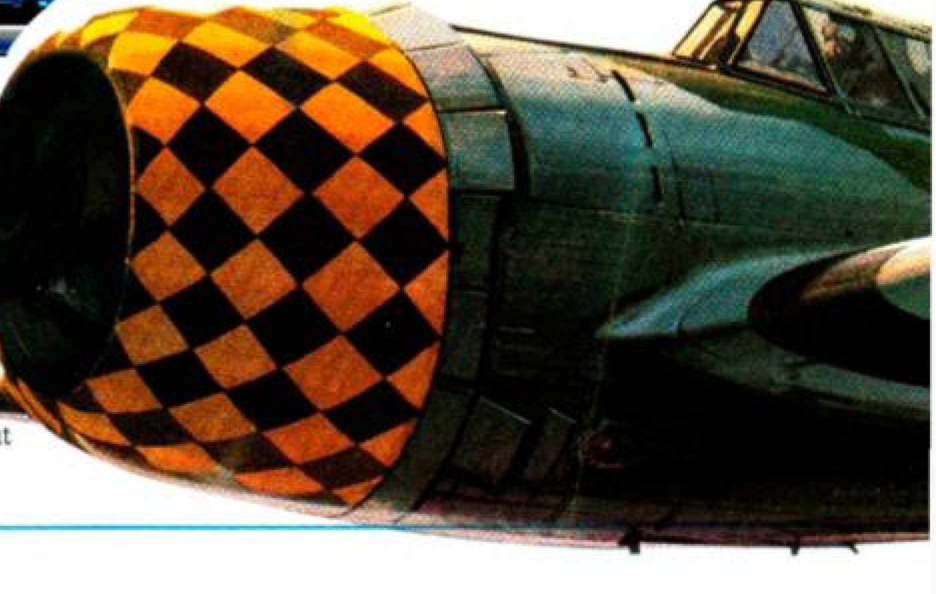
AA RAVE!



● The high-speed missile attack.



● The train blows up, and its bye bye Level One.





● The missiles are highly effective on Level One.



● Special weapons make life so much easier.


● A mid-level guardian bomber is no trouble for a P-47 armed with 'death frisbees'.

sprite reaction: touch that 'stick and you dive earthwards at an alarming pace. Throw in some imaginative, if historically inaccurate, sprites to shoot and you've a fresh and lively shoot-em-down that demands you play time after time.

Some of this power is drawn from the graphics, which are complex enough to gain your admiration, but they never overpower the main game itself. The sunset on level two is a minor masterpiece, the ground details on levels one and three detailed enough to catch out the first-time flier who's used to flat, non layered backgrounds. But, oh, the explosions when you or anything on screen blows up; the multicoloured flames billowing out make napalm death look quite picturesque.

The *P-47* glides about the screen banking when changing height or direction. The missiles travel at a speed that is disgusting and shouldn't be allowed – on the grounds that it's far too dangerous! And this version of the *P-47* can fly backwards as easily as forwards. So when the flak starts to clog the airways you can weave around in a desperate hunt for an exit.

Sonically the game has limitations, mainly because so much of the machine is working overtime trying to keep the high-speed spites in action. There are explosions and fire noises, but in the heat of battle it sounds more like a raging thunderstorm. There's a tune too, but its jolly jingle qualities sound almost perfectly out of place. It does serve to keep your mind off things, though, while you work your way past the loading screens in order to get back to the game itself.

There are precious few really classy shoot-em-ups on the CPC. Luckily their ranks have been swollen by *P-47*, which is simple but exceptional in its performance. The programmers haven't gone OTT trying to cram it full of accurate World War II planes and obstacles. They just used that as their starting point and then went wild.

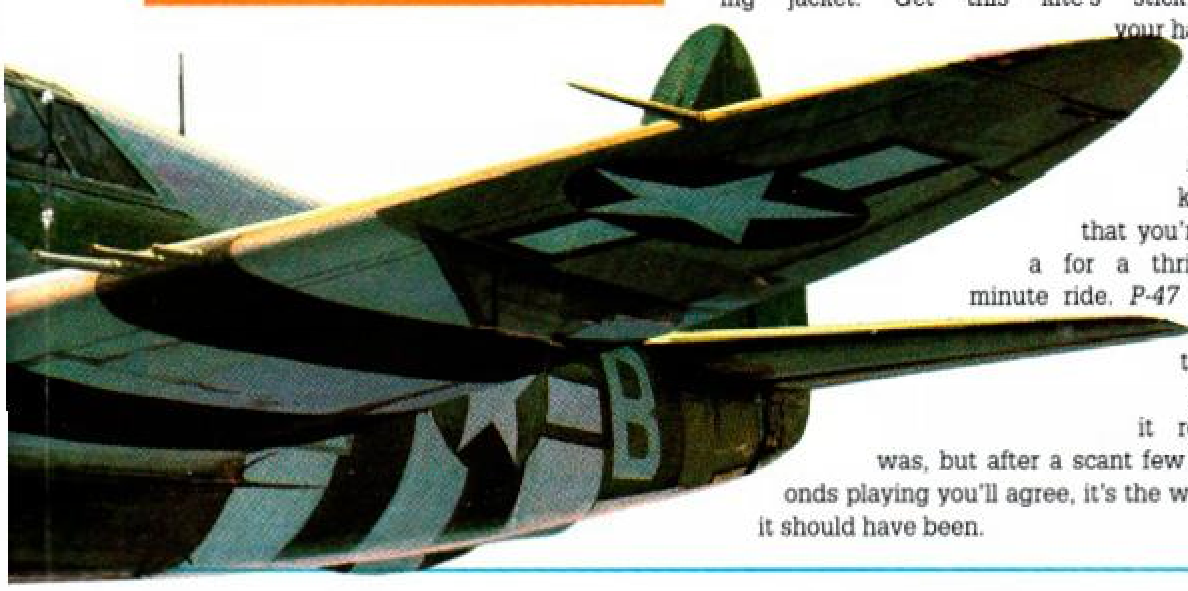
Instantly addictive, you'll log many hours before you tire of *P-47* and hang up your flying jacket. Get this kite's stick in your hands and you will soon know that you're in a for a thrill a minute ride. *P-47* may not tell it how it really was, but after a scant few seconds playing you'll agree, it's the way it it should have been. TW

SECOND OPINION

Just another shoot-em-up when all's said and done, but set apart from the crowd by its superb graphics and nice touches like the banking sprite. RL

GREEN SCREEN

The wild green yonder's still smart.





● An extra life's up for grabs on Level One.

FIRST DAY TARGET SCORE

30,000 points

The Verdict

GRAPHICS 97%
- Fantastically fast shoot-em-down.
- Great backdrops.

SONICS 52%
- Tolerable tune.
- Rumbling effects.

GRAB FACTOR 88%
- Instant addiction.

STAYING POWER ... 72%
- Gets progressively harder.
- Learn the tricks, beat the level!

AA RATING 89%

- A classic airborne blast.



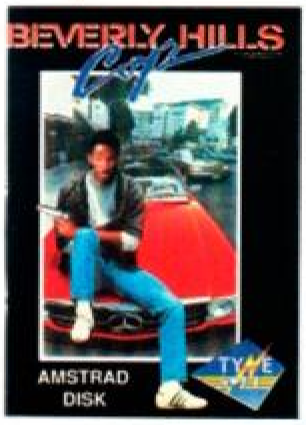
● Axel fights his way through the arms store.



● Axel F storms Mr Big's luxury mansion.

BEVERLY HILLS COP

Tynesoft ● £9.99 cass, £14.99 disk · joystick/keys



Sylvester Stallone was supposed to play Axel Foley in *Beverly Hills Cop.* Fortunately he was busy, and Eddie Murphy became the streetwise Detroit cop. Now the heat is on for the CPC, as Eddie once again gets caught in Beverly Hills, this time on the trail of arms smugglers.

The game's four different sections can either played individually – making it a long multiloader – or as an ongoing arcade adventure. They form a trail that leads Axel F to the heart of an international gun-running conspiracy. The bad boys have big bucks invested in this little scheme and will do anything to ensure success. So you'll need a cool head and a hot gun to survive, which roughly equates with winning.

The first level's at the smugglers' base, where they've been stockpiling weapons. As they're loading vans for the final big shipment, into the danger zone rolls our hero.

SECOND OPINION

It's far too easy. All the good ideas in the world can't save a game if you finish it it one afternoon! A good try but not quite good enough. **RL**

GREEN SCREEN

BCH is A OK.

Axel walks between crates trying wipe out all the criminals – what's wrong with arrests all of a sudden? – blasting away with his Colt 45. He can only duck out of the way of shots, while the criminals have plenty of crate cover and will stop at nothing to kill him.

Being arms dealers they've got plenty of cannon-power and must be despatched with the utmost speed, because if you let these heavies get on top of you... (*I think that's enough – ed!*). This level is seen from the side as Axel fires forward and overhead, cowers and runs. The criminals fall quickly when shot – but so does Mr Foley, so take care.

The second section follows the warehouse raid, as some of the loaded vans attempt to escape. But they haven't bargained on Axel Foley's Merc'. The dashboard's at the bottom of the screen, the car it controls in the centre. A barren landscape surrounds the road, but it's the tarmac that's important, not the scenery. You overtake the trucks or shoot the ammunition inside, forcing them to stop. The bad guys throw out crates to block your path, but that's no problem for a master driver like yourself or Axel.

Although no threat to *Chase HQ*, the section works well. If anything, though, it's too easy. Once you've nicked the villians, you go onto the next stage via the main menu and loading screens.



●Win (above) or Lose (below)?

Level Three has a high-angle view of Axel storming the mansion of the boss smuggler. He's positioned 39 guards in the grounds and Axel daren't leave one alive. You need to stalk and track the guards, then kill them. A flick-screen game, it has some nasty surprises, with Axel stumbling into large groups of guards all pointing their guns his way. A good memory, a cool head and quick reactions are essential if you're to triumph over apparently insurmountable odds. As with all the games, you get three lives, each depicted as a heart that slowly drains of blood as the fight and time progress.

Once into the Mansion – the fourth level – it's a game of catch-the-criminal. There's a *Freescape* meets *Operation Wolf* view of the world, as you roam around the corridors, gunning down more guards trying to find the hostage they've snatched 'as insurance'. There are four floors, all connected by lifts, and to add spice there's a bomb, planted to ensure you'll never take Mr Big alive!. The game's objective is threefold: find the hostage, kill Mr Big and if a bomb's activated, know the shortest possible route out of the house! With only three lives, he who hesitates is boss, with the foolhardy soon going up in the world.

The nature of the game means that there can be no overall graphical style, but what there is looks a little rudimentary. Importantly, though, the graphics always remain clear, never impairing the game. The film tie-in is detrimental in this respect, as the movie has such strong associated images for the gamesplayer to compare with the on-screen action. But you'd be hard pushed to fault the soundtrack which features the hit theme 'Axel F'. While not perfect, it's good enough to recreate the feel of the film.

Beverly Hills Cop was a tough licence, with the film relying 100% on Eddie Murphy for character. Without his humour the game is bound to fall short of any expectations, but it's still good. Even with its basic graphics, this Eddie Murphy compilation works. The games are well thought out and implemented. They favour the easier side of play, partially due to the ability to select them out of sequence, but also because in the movie the outcome's never in question. Axel always wins, and it's the style in which he does it that matters. The film was also noted for its profanity, and Tynesoft have produced a game about Eddie Murphy that manages to avoid the word $*%! (*Do you mind? – ed*) **TW**

FIRST DAY TARGET SCORE

Finish Level One

The Verdict

GRAPHICS 60%
- Functional, efficient sprites.
- Not a stunner.

SONICS 75%
- Axel F on the CPC.
- Moderate effects.

GRAB FACTOR 77%
- Four different games at your fingertips
- All very playable.

STAYING POWER ... 61%
- Play games individually or as an arcade adventure.
- Too easy?

AA RATING 69%
- Movie fun in multiple stages.



● Manhunting on Level Four.



● Axel slaps on the cuffs in Level Two.

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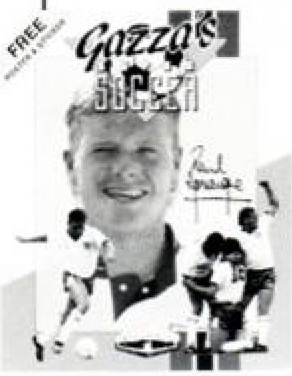
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GAZZA'S SUPER SOCCER

Empire ● £9.99 cass, £14.99 disk · joystick/keys



There comes a time, the walrus said, to talk of many things. Of shoes and ships and sealing wax... and how the hell you actually play *Gazza's Super Soccer*! After repeated games you'll find that while you know what to do, the big question is *how*!

Gazza's specifications are impressive: correct strips, league-building facilities, individual player characteristics, realistic ball control, set piece manouvres, heading, fouling, tackling, one or two-player action, plus a veritable Aladdin's Cave of cups, practice matches, corners, free kicks and penalties. Mighty claims indeed, but does the million-pound man live up to his billing?

The true test of any footie sim has to be on the pitch. In *Gazza*, a unique approach has been attempted, with the centre of the pitch viewed from the side – from the stands – while the goalmouth action is seen from the end to give a TV perspective of what's going down. The aim's to create a game that not only looks different, but that gives you more of the goal to see and shoot at.

The controls are largely traditional, with the player running in the direction of the joystick/key command and kicking on a push of the fire button. Shot strength can be gauged by use of a boot-o-meter, as can direction and spin. Although the length of time the trigger is held often proves a less distracting guide. Control of specific players is changed by pressing Fire with the joystick untouched.

The system for switching between playing areas uses a flick-screen set up. As soon as the ball crosses between one of the three sectors, the view automatically swings to follow it. Beware, though – the player control cursor doesn't automatically transfer to one of your players in the new area. So you can suddenly find yourself trying to play with a man that's no longer on screen or with no-one near the ball!

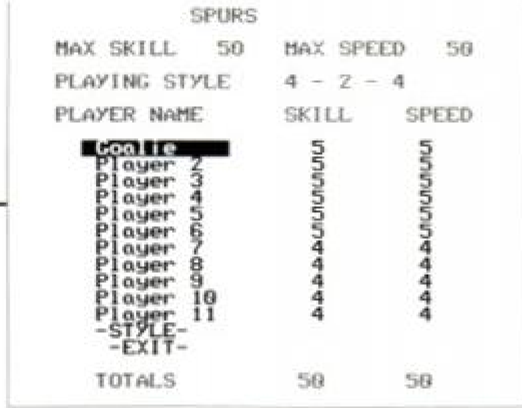
Dribbling the length of the field is tough too, because of the flick-screen's rather odd characteristics. You play up the screen towards each goal, while in the central section you play from left to right. This means that not only is it entirely possible for you to forget which way the correct goal is, but a 90 degree change in direction is necessary if you run from a goalmouth to the centre of the pitch. Which means you lose the ball and all sense of direction.

The menus in between games allow you to develop the squad into a formidable football force by boosting their skill and fitness levels. You can even create leagues and tournaments to enter and play in. But all this work is held back by the lack of control on the pitch itself.

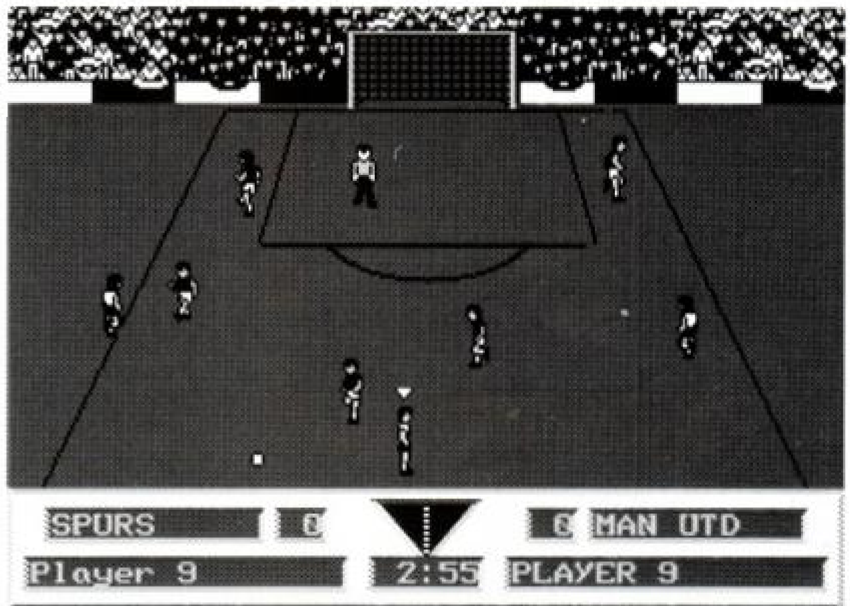
First off you'll be amazed at the lad from Newcastle's funny run, which features a nice line in quantum leaps. It's as if he's been taught the art of sprinting by a super-fit team of morris dancers.

Graphically, the players themselves are a happy and healthy bunch, although a bit stiff. They also feature an amazing ability to dribble with the ball behind them! This makes tackling harder, and seeing the ball impossible! Their realistic strip colours, though, look far from authentic. Unless your team actually plays in black and white that is! As for goalie movement, keepers like to dive for the ball occasionally, which for all the waggling in the world is a move you'll never get out of Gazza's boys.

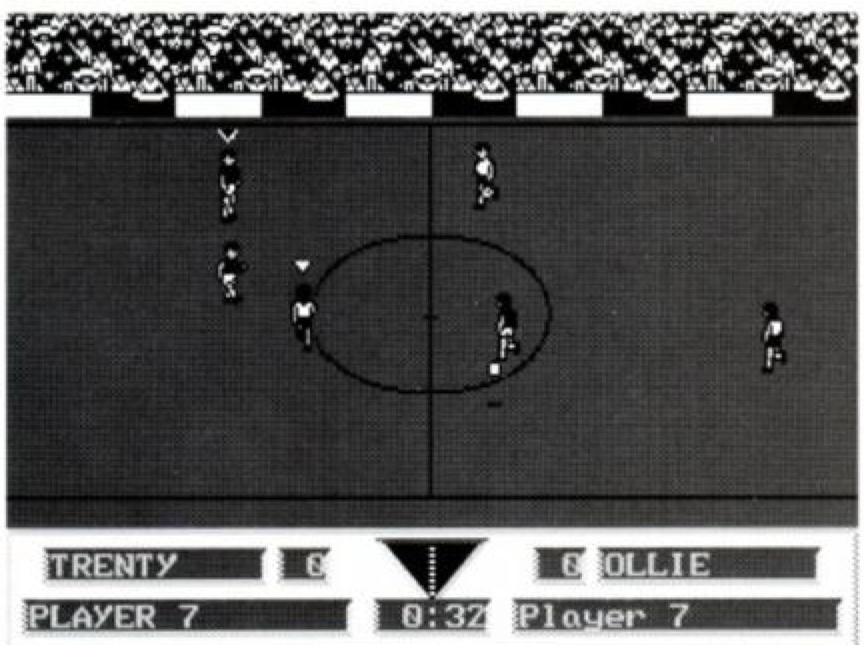
Gazza may be OK as a stop-gap substitute, but until they get injured, play *Gary Lineker* or *Emlyn Hughes* instead. TW



● Fiddling with your players' attributes.



● Your centre-forward, rushing to avoid the ball.



● Mid-field tactics aren't helped by the dodgy control.

SECOND OPINION

Difficult to control, and your players all move as if they've got springs under their boots... RL

GREEN SCREEN

No better.

FIRST DAY TARGET SCORE

Score a goal

The Verdict

GRAPHICS **55%**
- Good sprites.
- Bad animation.

SONICS **10%**
- Is it interference or crowd noise?

GRAB FACTOR **33%**
- Hard to control.
- Less than comprehensive instructions.

STAYING POWER ... **45%**
- It may be possible to master the finer points.

AA RATING 46%

- Annoying and tiring footie sim.

EXCLUSIVE PREVIEW!

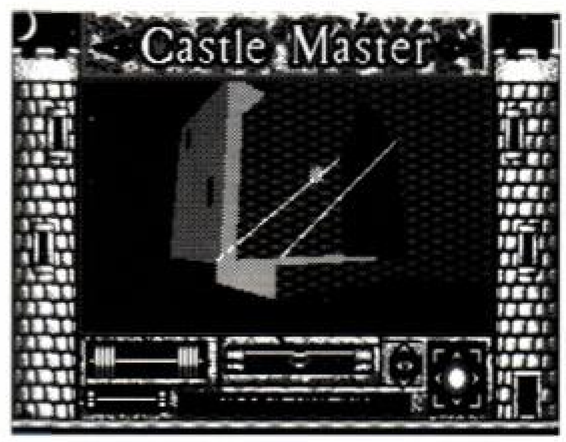
Castle Master

The first CPC screenshots...

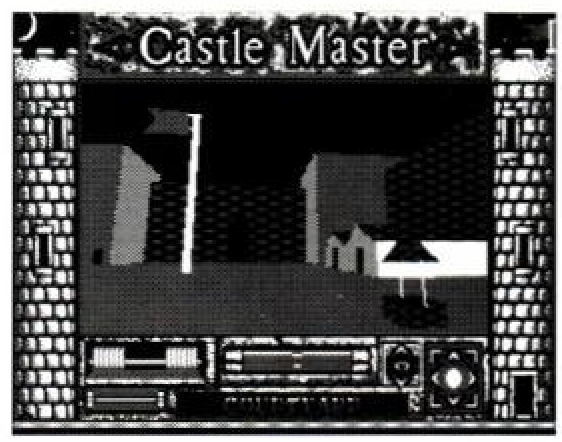












FREESCAPE™

Incentive has been strangely quite since the stunning *Total Eclipse* – Mastergame and covertape, *AA40*. Now the wait is almost over, and *AA* is able to bring you exclusive preview shots of the next Incentive epic, *Castle Master*.

Castle Master takes you into the 16th Century, and a world of knights, dragons and wizardry. A young royal has been kidnapped and has to be rescued from a castle guarded by snakes, spirits and other strange beasts. You must break into the fortress, search the four towers and save them; all while destroying the forces of evil constantly chipping away at your courage. Fail and the portcullis will come crashing down trapping you forever!

If you've never played a *Freescape* game, then look to the screenshots and marvel. *Castle Master* will let you wander corridors and rooms examining them from every angle, trying to find those vital relics that will turn the game. You can pick up objects and catapault stones at spirits, with a realistic time scale injecting the need for speed; living the adventure rather than reading about it in text messages.

These screen shots and plot synopsis indicate that the graphics will be more detailed than even *Sphinx Jinx* or *Total Eclipse*, the brainteasing puzzles more complex than *Dark Side* or *Driller*! Are you ready to try your hand at becoming a *Castle Master*? *AA* is, and will bring you the review as soon as the first disk is mastered...



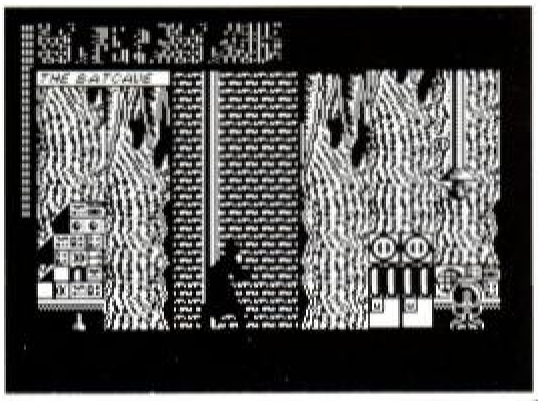




THE BIZ

Ocean ● £9.99 cass joystick/keys

Recently compilations have been flooding out at a rate of knots, but none can claim to be the games-playing Biz! Ocean has stolen that title once and for all with a bundle of games that will have your monitor in raptures and your joystick quivering in overload.

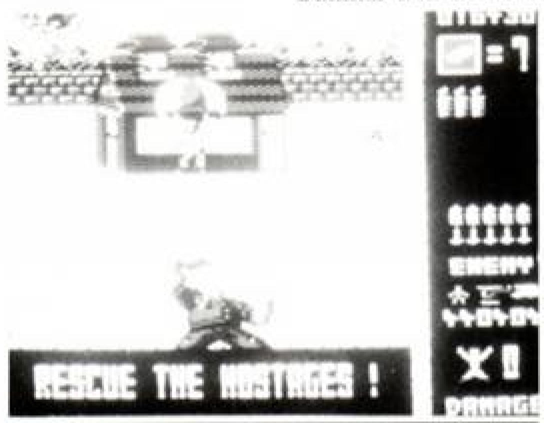


● *Batman*: Skulking in the Batcave.

The Biz is a pack of four titles that were major licences in their own right, three of which stormed the CPC games charts in Christmas/New Year '89/'90. *Operation Wolf*, *R-Type*, *Batman – The Caped Crusader* and *Double Dragon* are the star games, but the real heroes are the programmers who crammed such great code into home computer systems.

The overall, die-hard, undisputed, best of the bunch (*stop wibbling! – ed*) is *Operation Wolf*. Taken from the mould-breaking arcade, you get a chance to go ape in the jungle with an Uzi, a bunch of grenades and a whole load of terrorists to kill. Winning is simply a matter of lining up your sights and shooting – or, if you're feeling particularly nasty, lobbing fragmentation bombs about. The bad guys fire back with increasing accuracy, so the aim of the game is ostensibly, 'do unto others before they do unto you'.

Helicopters, boats, jeeps and tanks are around to spice up the later levels, as are bad dudes in bulletproof jackets carrying belt-fed machine guns. You need to collect energy giving 'pop' bottles and ammunition to replenish your constantly-dwindling supplies. It got a Rave and deserved every percentage point for the frenetic action it captured on screen.



● *Op Wolf*: Classic conversion of a classic arcade.

R-Type is in much the same vein, a scrolling shoot-em-up that was smash in the arcade due to the vast array of aliens, guardians and 'power-ups' on offer. Again, the IQ level may have been lacking, but the speed of reaction required was enough to ensure instant addiction. The CPC version – a Speccy port – initially looked disappointing, but if played, a magic all of its own was soon apparent. It's tough, but practice soon allows perfection in the art of trashing tentacled things, particularly with the special weapons, which are both pretty and effective.



● *Double Dragon*: OK if you like arthritic slugs...

Batman – The Caped Crusader is an action adventure that seeks to capture the flavour of the camped-up '60s TV series. Batman has to find a whole host of objects to defeat the Joker and Penguin in the two separate stories. The graphics feature heavy comic book influences, with each screen appearing overlaid in cartoon fashion, a short, squat Batman and items such as the Bat-disguise kit (Mickey Mouse ears!) to let you sneak into the felons' hideout. A strange and intriguing game.



Double Dragon, the original beat-em-up, suffers the same sorry fate as many coin-op conversions and just doesn't stand up away from the arcade. The graphics are all very pretty, but the sprites move at the speed of an arthritic slug on valium. Seeing as everyone else moves in slow motion too, though, it somehow makes the game almost playable. Most people would be outraged, but dedicated dragon fans will no doubt find its baseball-bat-swinging charm as irresistible as ever.

What seperates *The Biz* out from the crowd isn't just the overall quality of the software, but the variety of games within the compilation.

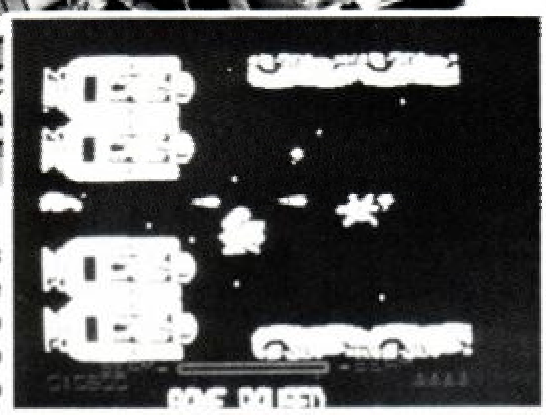
Op Wolf gives plunges you deep into the action with a novel – and much imitated – arcade blast.

R-Type takes the more traditional route into the world of alien bashing with a shoot-em-up that breaks no bounds, yet is a fine example of the genre.

Batman provides the grey matter with something to do between the random acts of brutality.

Double Dragon, meanwhile, has its place as the token beat-em-up.

Even though the compilation is only on tape and three of the games are multi-loaders, it's a stonking selection.



● *R-Type*: A tough, but ultimately worthwhile, blast.

Variety is the spice of good games and here, while they're all from one overall sphere – arcade/action, you get to play four completely different game styles.

If you're looking for action, go for it, it'll make your day!

TW

The Verdict

Double Dragon	Not Reviewed	
Operation Wolf	AA40	81%
R Type	AA41	57%
Batman	AA41	74%

AA RATING 81%

☐ A great mix of games – truly *The Biz*

NINJA WARRIORS

Virgin Games ● £9.99 cass, £14.59 disk joystick/keys

Nostrodamus predicted many things: the outbreak of both world wars, the Kennedy assassination and the Austin Metro fifth gear option in 1985... one thing he overlooked, however, was the decay of society in the early '90s and the subsequent rise of Bangler's evil empire. Had he foreseen this, then work on the *Ninja Warriors* could have begun years earlier, much suffering could have been avoided and many lives saved.

Unfortunately, the whole world is now under the control of the tyrannical Bangler and times are desperate. The only hope lies with a group of research scientists sworn to his downfall – because he scrapped their study grant! They've perfected robots of awesome potential; perfect killing machines that fight by remote control, cutting out the rather obvious danger of dying if you try it in person!



●The purple samurai's determined and dangerous.

The *Ninja Warriors* have toughened steel skins, lightning-fast reactions and two lethally-sharp katanas. They face an awesome array of all that's nasty, mean and vicious in Bangler's vast army. Tanks, soldiers and mutated super-beasts wait en route, trying to stop you killing their leader, saving the world and making it home in time for tea.

The field of battle is a long thin, cinema-style screen which the *Ninja Warriors* fight across. They walk and leap to dodge bullets, occasionally stopping to clear a path and pack some Bangler boys into body bags. The controls are simple enough: ducking and standing, you can lash out instantly with the swords. If they're too far away for cutting, then throw a death star to send some more mutants to meet their radioactive maker.

To begin with, your superpowered killing machines are in little danger, just the occasional rifle shot whizzing past their metal ears. Life gets tougher when mutants drop out of the sky, huge tanks roll on, and hang-glider hit-men swoop in, all eager to fight. Fire-breathers and superbaddies are your foes, but as your boys are really ultra-mobile battletanks, the odds are even, especially in two player mode!

A Ninja Warrior's life expectancy is measured by the amount of damage his armour takes before his vital systems fail, causing a beautiful but final firework show. The number of hits is indicated on an energy bar and this is the only vital statistic worth watching. Time is irrelevant, high scores of little more than academic interest, the challenge being to reach areas never before seen through the ninjas' electronic eyes.



● An evil mutant attacks.

Gameplay is a simply matter of timing jumps and blows to avoid shots and maximise the body count. Graceful forward flicks take you flying over foes to strike from behind. The risk with this ploy being the possibility of landing on your enemies, as touching them – strangely – causes as much damage as being shot!

SECOND OPINION

Your ninjas do really neat forward somersaults, but that's about it. **AW**

GREEN SCREEN

Confusing in two-player mode.

The easy option appears to be firing off one of your thirty shuriken to kill from long range, but restrain yourself! These are needed to destroy the end-of-level guardians. Death star economy is frustrated by the ease with which they're thrown accidentally. Touch Fire while you're out of sword range and a shuriken flies from your paw never to be seen again. The only safe rule of thumb has to be: only strike if you can smell their breath, otherwise stay low and bide your time.

The arcade history is instantly apparent, especially in two-player mode. End-of-level guardians are tough, but the each can be defeated if you're willing to waste a few lives in experimentation. Graphically, the long thin screen tries to recapture the three-monitor-wide arcade original – the two stars of the show stayed and fought on the central display, but the bad guys could fire and throw things at you from either side – a stunning if pointless effect. The CPC version tries to emulate this, but the overall impact is naturally lost.

The music played during the opening sequence sounds vaguely Japanese, but that's where the continuity ends. It's yet another arcade-style jingle that sounds totally out of place around mass murder and mayhem. There are the standard effects too, but little else to send the ears into raptures. The music and effects adding nothing to the game.



The small but clear sprites try to bring the conversion to life. Playing with two means double the fun fending off attackers from all directions. But crafty and clever coding cannot disguise the lack of gameplay, a factor further highlighted by the ease with which the life-saving death stars are squandered and the overall vulnerability of the Ninjas, touchwise.

Ninja Warriors proves, yet again, that big arcade hits aren't necessarily destined to be brilliant home computer games – regardless of the programming skill employed in replication. It's a fun game, but lacks the involvement to keep you plugging away into the wee small hours. Occasionally, though, you'll find it an amusing release to turn Bangler into a bungler; not with cutting remarks but the swords of your *Ninja Warriors*. **TW**



● Kill the gunner to beat the end-of-level tank.

FIRST DAY TARGET SCORE

Kill the tank

The Verdict

GRAPHICS 72%
- □ Small, chunky sprites.
- ■ Small playing area.

SONICS 50%
- □ It's got a tune...
- ■ ...but so what!

GRAB FACTOR 63%
- □ Reasonable novelty value.
- ■ Mistakes quickly become fatal.

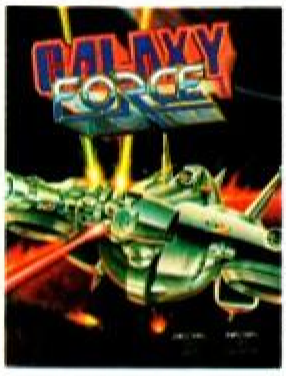
STAYING POWER ... 44%
- ■ There's just not enough to do.
- ■ Limited number of enemies.

AA RATING 60%

□ Reasonable conversion of an odd arcade.

GALAXY FORCE

Activision ● £9.99 cass, £14.99 disk joystick/keys





●Racing off to Level One.



● Dodge the space station and keep blasting.

Oh, the smell of rocket fuel and the, er, void in your hair! As one of the dashing heroes of *Galaxy Force* your job was to rip around the star system at ridiculous speeds, look good and talk in a funny language about prangs, kites, and some bandits who were apparently arriving around three o'clock. That was until the Forth Empire obliterated five friendly planets and started light-sabre rattling at countless others.

Now you're being asked to do some fighting and save the galaxy, which is something they forgot to mention when you signed up for the *Force*. The five captured planets have to be re-taken, and the Forth bases destroyed if the imperialist dogs are to be stopped from total domination of free worlds everywhere. The squadron seems to have gone down with a mysterious stomach bug, so you are left to complete the task alone. You may not be ready, but this is the time for action.

> ## SECOND OPINION
> *There are games with great-looking graphics but no gameplay. There are games with appalling graphics but superb gameplay.* Galaxy Force *combines the two – dismal graphics and non-existent gameplay.* AW
>
> **GREEN SCREEN**
> *No better.*

Before the off, you can do a little reccie, and decide which of the worlds you want to have a crack at. None are going to welcome you with open arms, just fire-arms, and lots of them! They range from water worlds to fire planets, the difference being largely scenic, with only the occasional special enemy to kill.

First, you fly above the surface, picking off incoming fighters with your constantly-firing lasers and guided missiles. Wait till the head-up display blinks into the 'lock on' position, pump the trigger and they're history. Unfortunately, the members of the Forth Empire don't seem to mind the dying, and throw themselves tirelessly in your path. A factor luckily balanced by an infinite supply of missiles.



● Destroying the Forth base.

After the defeat of the surface fighters the trail leads underground and to an assault on the base itself. Naturally, flying at Mach 3 through tunnels isn't actually a very safe occupation. Great care is needed to avoid walls, ceilings and other hazards one would expect to find when piloting a spaceship in a cave. To compound the difficulty Forth fighters still insist on flying straight towards you, trying to ram you out of their airspace.

At the end of the tunnel is the Forth base, not light. Once here, the fighters magically disappear, you can slip your ship into neutral and slam off explosives until the battlestation crumbles. After the base has been trashed it's back onto the intergalactic express, to find some more Forths on another world.

That's the theory, anyway, but things don't actually work out that way. The scrolling's jerky, especially in the tunnels, which critically impairs judgements about safety margins. To make matters worse still, the little 'guider' arrows that are supposed to show you the safe route through the caverns don't actually work! They appear on screen too early, causing eager pilots to fly straight into the cliff face, only to disappear at precisely the wrong moment at the end of the turning

As for gameplay, there's none to report. All you have to do is fly along keeping away from the enemy and tunnel walls. The shooting becomes simply a pleasant way to pass the time while you save energy by avoiding things. The enemy craft don't fire back, which makes shooting them down seem pointless and doesn't form a riveting foundation for a game.

Galaxy Force looks and plays like *Afterburner* but in a much lower league. With the threat factor traded off for the tunnel sequences, these have to be extra-tortuous, so you're bound to die after repeated impacts. The credit feature prolongs the agony rather than giving you a second chance.

Galaxy Force is a disappointment, as was its arcade forefather. It's almost impossible to play well, as the tunnels are simply too jerky to negotiate, regardless of skill. The shooting is pointless – it's not in self-defence and serves little other purpose than distracting you. The sound's oddly absent, although its credited (on the tape version) and the spot effects are tiresome. All in all more of a *Galaxy Farce* than *Force*. TW

FIRST DAY TARGET SCORE

Finish Level Two

The Verdict

GRAPHICS 46%
- Very jerky scrolling.
- Confusion city.

SONICS 33%
- No tune.
- Average spot effects.

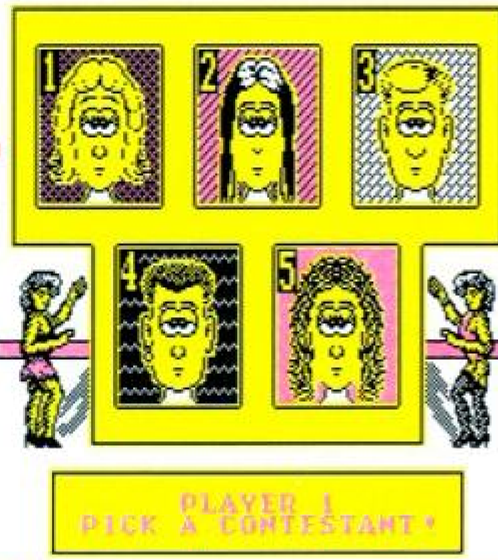
GRAB FACTOR 50%
- Killing things is easy...
- ...because they don't fire back!

STAYING POWER 30%
- Five levels.
- Not exactly riveting.

AA RATING 40%
- Tiresome arcade blast.



● When flying in one of the tunnels, avoid the walls to save energy, and don't believe the arrows!



● Hmm... don't fancy any of 'em much.



PUB TRIVIA

Codemasters ● £2.99 cass
joystick/keys

Pub Trivia sets out to replicate the machines that have taken pubs, clubs and hostelries by storm over the last two years.

There are no actual winnings, of course, but if you manage to get a cash question right then that acts as a credit for another game. The ratings for scores start at 'stupid', working up through 'dimwit' to less insulting titles. The only realistic way to get out of the DENSA category and into MENSA is to stash away loads of credits early on.

There are five different question categories: Sport, music, trivia, showbiz and jokers. Your first choice limits the future questions, so think carefully about your route to the top. Jokers are useful as they form a free pass to the next rank – but don't score points.

With over 2,000 questions in two separate loads, there are enough to keep you guessing for weeks.

The graphics feature the kind of uncomplicated cartoon-style characters and button pressing hand you can cope with after fifteen pints of Special Brew. The music wouldn't sound too bad then, either!

The elements of chance, skill and general knowledge combine well to make this a great budget quiz. There may be a limited number of possible posers, but this is balanced out by the random side of some questions and cash prize (credit) placement. These are sufficiently unpredictable to make *Pub Trivia* an addictive, tough challenge. Besides, the many useless facts may prove invaluable for impressing people at dinner parties, after-dinner speaking or even scooping the jackpot next time you pop in the Ferret and Turnip! **TW**



● Route to the top – but have you got the brains?

SECOND OPINION

Just like the original Trivial Pursuits – you either love it to bits or find the whole game style just too tedious to bear **RL**

GREEN SCREEN
Perfectly suited.

FIRST DAY TARGET SCORE
3,000 points

The Verdict

GRAPHICS **60%**
- Cheeky cheerful graphics.

SONICS **50%**
- Twee theme tune

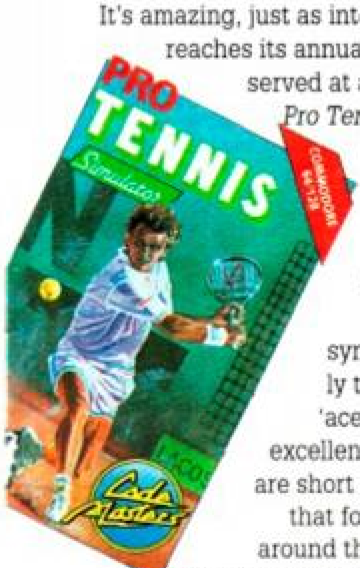
GRAB FACTOR **84%**
- Instant quiz fun

STAYING POWER .. **64%**
- 2000 questions...
- ...but is that enough?

AA RATING **70%**
- You won't call time on *Pub Trivia* for ages!

PRO TENNIS SIMULATOR

Codemasters ● £2.99 cass
joystick/keys



It's amazing, just as interest in summer sports reaches its annual nadir, tennis sims are served at a perplexing rate. Does *Pro Tennis Simulator* follow in the sneakers of British tennis greats like Buster Motram? (Or is it good?) The most instantly stunning feature is the 100-word synopsis explaining clearly the rules of tennis. This 'ace service' is followed by excellent graphics. The players are short and tubby but don't let that fool you – they can move around the court at great speed.

Control is easy on either joystick or keys, with a snappy response to even the quickest stab of the fire button to make your players hit the ball.

It's when serving that *Pro Tennis* falters, due to the subtlety of technique needed. Unless you're an experienced player you'll never win a service game, and you can't become and experienced player until...



● Trenton, playing like a star – Luciano Pavarotti.

Rallies, once they get going, are fun and furious in pace. Two-player games becoming especially intense as both guys scuttle around trying to reach the ball.

As a budget game, *Pro Tennis* is fun and frustrating. As a tennis sim, it's sadly lacking in the depth of features needed to make it an accurate and playable game. In the great tie break that is life, *Pro Tennis* appears to be facing match point. **TW**

SECOND OPINION

Nice little game, not quite up to Wimbledon standards, though. **AW**

GREEN SCREEN
Green tennis looks fine.

FIRST DAY TARGET SCORE
Learn to serve

The Verdict

GRAPHICS **69%**
- Good player sprites.
- Ball travel is deceiving.

SONICS **55%**
- Nothing special, nothing bad.

GRAB FACTOR **33%**
- Rallies are fun.
- Serving's a nightmare.

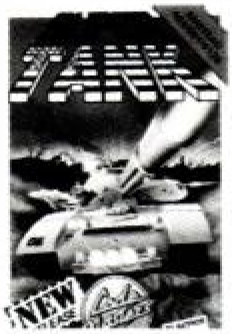
STAYING POWER ... **64%**
- Exciting in two-player.
- Gets dull for one.

AA RATING **61%**
- Competent, but shallow sports sim.

ACTION TEST

SUPER TANK SIMULATOR

Codemasters ● £2.99 cass joystick/keys



Tanks, the ultimate war machines – or so it was thought! That was until people realised that a 50-ton lump of steel crawling across the battlefield made a nice target. Now, however, dawns the day of the super tank.

This NATO wonder weapon is on a mission to take out an enemy force single-handed. The first level is a view-from-above, run-of-the-mill Codemasters vehicle sim. Control is tough at first because it's hard to see which way is forward, and the controls are confusing. Then all you have to do is roam around a base destroying people, places and positions. To fire, press the trigger and a rubber shell leaps from your barrel slightly slower than a speeding bullet. Shells only actually explode when they hit an enemy, so it's a good idea to practice rebounding shots of walls into targets, while you hide away out of danger.

Destroying the base takes you to the second, and more interesting, level. The perspective switches to inside the tank, looking down its gun sights out into the battle zone. Due to the tank's size and weight, the movement is pretty slow, which heightens realism but hinders playability – like *Operation Wolf*, before the operation!

The two modes of play do not sit easily together, throwing you from an uncontrollable tank battle viewed from above, to a slightly sluggish and quickly fatal 'behind the wheel' blast. Playing takes time and patience, as the fiddly controls for the overhead sections often lead to dangerous, if unintentional, tank placement. Meanwhile, the gun's slow responses add tension in the down-the-barrel bits.



● *Op Wolf* on tracks! Level Two.

Graphically, the game leaves you cold on the first level, looking like so many of Codemasters' past hits – *BMX*, *Grand Prix* and *SAS* sims. The second level is more ambitious and more impressive, showing the potential for such an idea. While the tunes and effects are standard fare for games, they are well above the budget norm.

Codemasters reads markets well, and has pre-empted some of the full-price software houses in releasing a tank simulator – and will benefit from the games world's desire for heavy metal action. If you can find a quick and easy route through the first level then this is what you'll get – *Op Wolf* with *real* guns. The structuring of levels acts against the game, *hiding its innovative features behind an every-day façade*. But to find it will take some dedication and patience, unfortunately! **TW**

SECOND OPINION

Pretty miserable first level, but things pick up later. **RL**

GREEN SCREEN

The camouflage is rather too effective on level one.

FIRST DAY TARGET SCORE

Reach Level Two

The Verdict

GRAPHICS **68%**
- ■ Ropey on one...
- □ ...improves vastly on two.

SONICS **60%**
- □ Both tune and effects are adequate

GRAB FACTOR **30%**
- □ Fiddly and tedious first level.

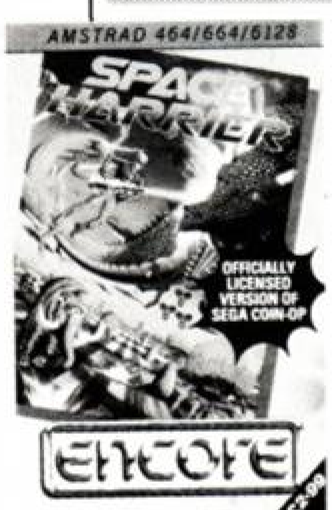
STAYING POWER ... **69%**
- □ The 'barrel sighting' sections are worth the wait.

AA RATING **63%**

- □ Good budget, spoiled by unoriginal first level.

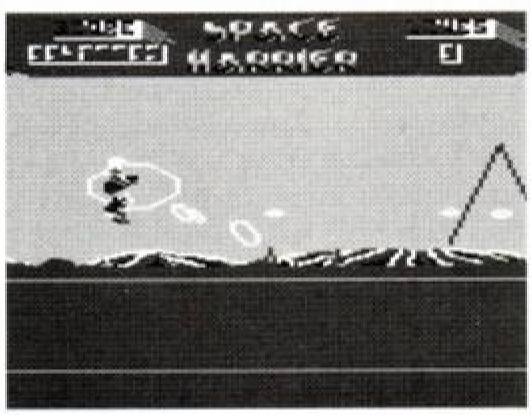
SPACE HARRIER

Encore ● £2.99 cass joystick/keys



I say, I say, I say, what do you get when you cross a jet-pack with a gun-toting psychopath? *Space Harrier*! The classic arcade – that's soon to see a sequel – has been re-released for all those unfortunates who've missed it first time round.

The Space Harrier is a guy with a gun, a grudge and guts. He flies or runs forward into the screen, blasting heroically at aliens who swoop in from the clouds. He has to shoot them and avoid the natural hazards, such as trees to stay alive and finish the level.



● Fast, and oh so frantic!

What's fun about this? The speed with which everything happens, that's what!

You scroll into the screen at such pace that human reactions aren't enough, and heavy bouts of luck are needed just to survive!

The piccies look a little dated, with outlines rather than solid, filled shapes, but this is a necessary sacrifice for speed. And what a brilliant trade off. This is possibly the fastest 'into-the-screen' feast of blasting ever! At its budget price you can't go far wrong if you find yourself prey to the occasional bout of kill-frenzy. Slap it in the tape deck now, and get wasting! **TW**

SECOND OPINION

So fast, at first sight it seems unplayable. Action-packed, but ultimately rather shallow. **RL**

GREEN SCREEN

Still splatter city!

FIRST DAY TARGET SCORE

Finish the second stage

The Verdict

GRAPHICS **90%**
- ■ Dated look.
- □ So very, very fast!

SONICS **71%**
- □ The authentic tune's great!

GRAB FACTOR **89%**
- □ Wickedly good shoot-out fun.

STAYING POWER ... **77%**
- □ Loads of levels.
- ■ Too much action!

AA RATING **80%**

- □ A true CPC classic.

BALROG

This month the Balrog gets himself into a bit of a hole – an *Orifice*, in face...

FOUR OF THE BEST

Boldly rambling where no gurt hairy monster has rambled before, the Balg strides into the latest from the author of *Dungeons Amethysts Alchemists n Everything* and into the depths of *Tulgey Woods* – all in the name of adventuring. First, though, there's news of some of the new adventures coming our way...

Who said the Amstrad adventure scene was dead? News this month of not one, not two but *four* adventures coming your way soon...

● *Last Days of Doom* from Topologika is the third and final part of Peter Killworth's best-selling *Doom* trilogy - and will be released in February, price £19.95. As with all Topologika games it is disk-only. The adventure game *Hezarim* is on the B-side.

● *Bloodwych* from Mirrorsoft has been delayed for quite some time now but looks finally set to be released (even though a certain other Amstrad magazine gave it 89% some six months ago!)



● Julian Gollop, author of the brilliant games *Rebelstar* and *Laser Squad*, is currently working on *Lords of Chaos*, a role-playing game using a similar game system to *Laser Squad*.



● CRL is also working on a fantasy role-playing game called *Tower of Light*. In it you must defeat the Dark Lord by finding the Tower of Light, getting the crown of Endil and crowning a new king... It looks well worth waiting for.



CONTACTING THE BALG

The Balg is always delighted to receive correspondence from software houses, programmers, readers and anyone else connected with the world of adventuring. You can write to him c/o Amstrad Action, Future Publishing Ltd, Beaufort Court, 30 Monmouth Street, Bath, Avon BA1 2AP.

Castle keeps it up

Following the Pilgrim's report on Castle Computers, the Balrog has news of some more Infocom games that still can be obtained:

Castle still has *Cutthroats, Ballyhoo* and *Hollywood Hijinx* in stock for £6 each (see mini reviews in *AA49*) and K&M computers has *Enchanter, Leather Goddesses of Phobos* and *Hitchhiker's Guide to the Galaxy* available at £20 each. *Enchanter* comes with the full packaging but the other two games are the 'paperback' versions - for example *Hitchhikers* does not come with the Don't Panic badge, fluff, miniature space fleet or Peril-Sensitive Sun Glasses. Phone K&M on 0695 29046 to check for availability.

ADLAN AT LAST?

***Adlan*, the long-awaited ROM-based adventure creator, looks like it will soon surface. Watch this space...**

AND THERE'S MORE...

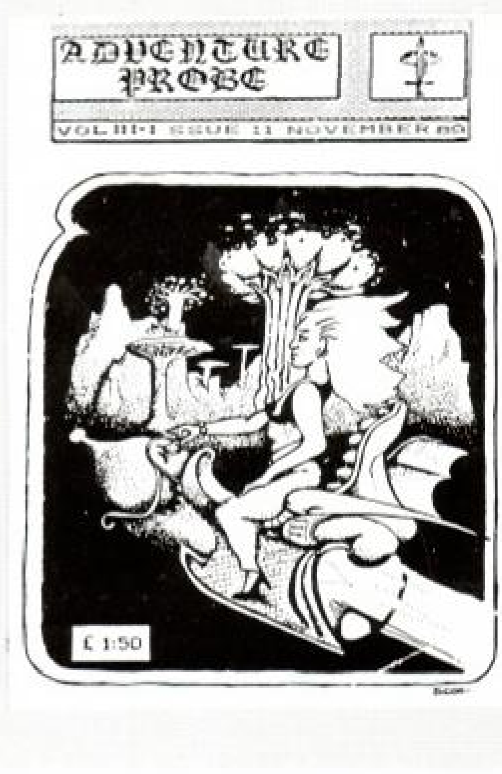
Secondcite, whose game *The Orifice from Outer Space* is reviewed this issue, has promised is *AA*-ers "a new adventure every month!" Wow! Let's hope they can keep up the quality and humour...

Honorary Balrog the First

No longer can you have HPilgs awarded to courageous and helpful Amstrad adventurers – the honour is now that of placing the letters HBalg after your name.

The worlds first Honorary Balrog is Mandy Rodrigues, editor of *Adventure Probe* magazine. Not only has she edited one of the best adventure fanzines for many years, she also writes adventure games (she has had a Number One in Denmark!) and was a great help in the return of the adventure column in *AA*. Thus Mandy is a true Honorary Balrog and as such can place the letters HBalg after her name. Congratulations Mandy - you deserve it!

Suggestions for Honorary Balrogs are welcome: Who do you think deserves such an accolade? Write to HBalg Nominations, The Balrog, Amstrad Action, Future Publishing Ltd, Beaufort Court, 30 Monmouth Street, Bath, Avon BA1 2AP.



The Orifice from Outer Space

£2.50 cass ● Secondcite ● Flat One, 83 Northern Grove, West Didsbury, Manchester M20.

The Orifice from Outer Space IS a strange game! Written by the author of *Dungeons Amethysts Alchemists 'n' Everything* and *Scary Tales*, it sports a 16 certificate. As with the previous games, this game is a parody of traditional adventures and is very amusing.

You are an unclean and nasty orifice which – in a recent surve – nine out of ten sentient beings in the known universe (who expressed a preference) found extremely undesirable. You have few friends. In fact, it was one of these "friends" who offered you the unmissable opportunity of an inter-galactic package holiday. But something went wrong and you were accidently knocked unconscious. When you awake and struggle free of your comfortable nailed-down crate you discover that the "pleasure-cruiser" is in flames!

Thus you must escape before the cruiser explodes. This part of the game is amusing, as you encounter the various characters on the ship, including the rather too friendly captain, a young boy and a beautiful kitchen officer.

Once you have escaped from the ship you land on a planet. Once again you must escape – this time so that you can return home. The only way to reach the space port is to collect reading material for the clerk at the Town Hall and so you must explore the planet to find these items.

Orifice is a fun *GAC*-ed game, but does it deserve the 16 certificate? Well, it is quite risqué in places, but doesn't really deserve the rating. In fact parts of the game have been censored (jokingly!) so that you cannot examine yourself or the naked kitchen officer!

In short, *Orifice* is a great game, but it suffers from the same criticism as *DAA* - it is a touch too easy. The author compares the level of difficulty with that of the first part of a Level 9 game and reasons that he writes games that anyone can complete. On saying that, *Orifice* is only £2.50 and for that price you just can't lose.



● *Orifice*: Wholly bizarre.

Atmosphere	64%
Interaction	51%
Challenge	46%
Overall	65%

Adventure Compilation:

Tulgey Woods ● Twelve Lost Souls ● Labyrinth Hall

£3.00 cass £4.50 disk ● Len Townsend ● 61 Lowergate Road, Huncoat, Accrington, Lancashire. BB5 6LN (0254 382349)

Tulgey Woods is the first in a planned eight-part (that's right fellow Balgs - eight parts!) adventure saga called *Superstition, the Covenant*. It is set in the most notorious of myth and fable woods called *Tulgey*, (a feared place in the olden days). The object of the adventure is to seek out and destroy each member of superstition covenant, eight in all. You must find out which elements, weapons and such like will be most affective against each member. *Tulgey Woods* is home to the Wood Witch and she fears the deadly dutch elm fungi, so no problem there, except once you've collected this fungi it dies very quickly. The graphics aren't exactly up to Magnetic Scrolls standards but the olde postcard-type pictures add a certain character to the adventure. *Tulgey* is quite difficult and mappers will like it as it is quite easy to become lost.

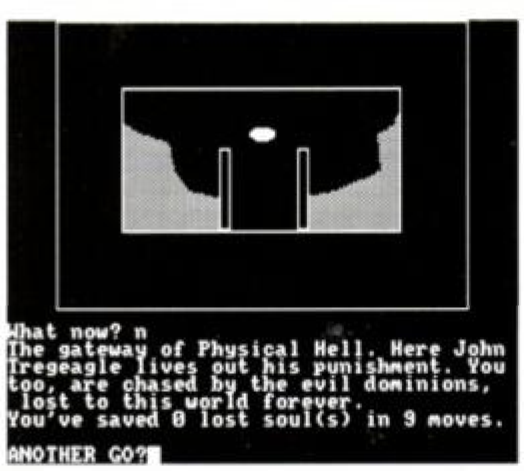
The other two adventures have been given away free (*Tulgey* is the major game) but they are both good in their own way.

Twelve Lost Souls is a 'simple' treasure-seeking game in which you must retrieve twelve souls and return them to the rightful owners so that everyone can live happily ever after.

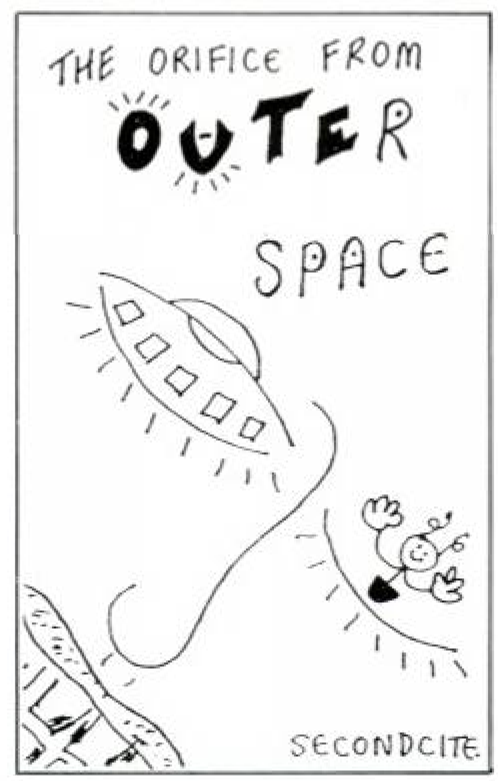
Labyrinth Hall is a castle and dungeon maze adventure with a difference.

All of the games were written using *GAC* and support the commands EXAMINE FURTHER or LOOK CLOSER. *Tulgey Woods* is clever, whilst the other two are basic - but they are free, after all. Buying three adventures for £3 means you can't go wrong but be warned that they aren't the best around – nor the worst either. *Tulgey Woods* shows potential and the Balg looks forward to part two and hopes it goes all the way to part eight without losing any of its charm or originality.

Atmosphere	63%
Interaction	52%
Challenge	66%
Overall	62%



● *Twelve Lost Souls*: infernal gameplay.



JUST FOR LAUGHS

Some very funny responses this month come from the intrepid Grue and Antcrusher.

Ballyhoo

- Show dead mouse to elephant

Hollywood Hijinx

- Tried calling Infocom (492-6000) on the phone?
- Tried to roll up the toupee?
- Read the various historical accounts of your past

Infidel

- Light torch

Clue Sniffing

A simmering pot of goodies, positively bubbling over with problem-solving. And in case you're wondering, these clue-ettes come to you courtesy of Dave Harvard, Wendy Watters, Simon Netherwood, Paul & Timothy Stitt, Jerome Young and Uncle Balrog himself...

Adventure Quest

- Wave the sling at the giant.
- Say "open sesame" at the canyon blocked by slab.

Boggit

- Say "LUX" to kill the trolls, the sword is in the cauldron. Insert battery from torch and the sword glows. Kill beholder with cigarette.

Hollywood Hijinx

- To enter house: At South Junction: Turn Buck West, Turn Buck East, Turn Buck North. (Refer to rear of photo of Uncle Buddy, note directions given in rhyme!)

Forest at the World's End

- Drop the log at the chasm to cross it, blow horn and the Dragon will take you down.

Questprobe

- Change to thing, close eyes, enter tent, get cannon, leave tent, open eyes.

Rebel Planet

- To leave the ship: Control the airlock with your watch, some things on the ship are red herrings. Remember, your card is very useful, especially if you want to go where Superman changes his clothes.

HELP!

- Daniel Tish is stuck in the first part of *Rigel's Revenge* – "Where is the uniform?" he asks.
- Stephen Braithwaite is desperate for some help in *Venom* – anyone want to help him out?
- Stephen Farrelly wants help in Kentilla: "I have killed the Urga-Mauls (searched everyone) the large one twice, I killed the cave-zat and Rescued Timandra. Elva made a bow but what I do with it? I can't find Zelda or the boat and I couldn't tie the rope to the stalactite so will you please try to help me."

Lords and Ladies of Adventure

Here they are again, and welcome Douglas Thompson, the Grue and Paul & Timothy Stitt to the most prestigious column in Adventureland. The Grue deserves a mention – he is what is known as an Infomaniac, as he loves Infocom games. Any Infocom game players will instantly recognise the name...

Atalan • Brawn Free • DAA 'n' Everything • Emerald Isle • Forest at the World's End • Gremlins • Fantasia • Diamond • Red Moon • Heroes of Karn • Inca Curse • Jewels of Babylon • Message from Andromeda • Mordons Quest • Mindshadow • Never Ending Story • Planet of Death • Trial of Arnold Blackwood.
Bob Adams, 81 Uplands, Welwyn Garden City, Herts, AL8 7E8

All Infocom games!
The Grue, 64 Country Road, Ormskirk, West Lancashire L39 1QH. Tel between 7.30pm and 9pm Mondays to Fridays 0695 573141.

Bards Tale • Colour of Magic • Hobbit • Lord of the Rings • Nightmare • Quest for the Golden Egg-cup • Shadows of Mordor • Times of Lore • Werewolf Simulator • Wizard Warz.
Douglas 'the 82 year old 6 foot 4 elf!' Thompson, 14 Cosgrove Close, Peterborough PE3 7JN.

Apache Gold • Boggit • Dodgy Geezers • Doomdark's Revenge • Heroes of Karn • Knight Tyme • Kobyashi Naru • Message from Andromeda • Questprobe • Ship of Doom • Spytrek • Terrormolinos • Never Ending Story • Warlord • Wizbiz.
Paul & Timothy Stitt, 7 Beaufort Avenue, Beechill Road, Newtownbreda, Belfast BT8 4TY Northern Ireland.

BALROG'S POSTBAG

● Hobbit Bugs...

Stephen Farrelly wrote in, desperate for help in *The Hobbit*: "I have the ring, small key, large key, gold key, lunch, small sword and curios map and I don't know where to go next. Also, there's a place where there's a bow above, a red dragon, two doors and a web. I can't get open, unlock or go to any of these objects and I can't move in any direction either." You have found one of the many bugs in the game, Stephen. In future, just avoid this location as once you enter it you cannot leave and must reset.

● Praise for Adventurers

"My husband Dave and I, through your column, would like to thank Stuart Whyte and 'The Witch of Wessex' (Joan Pancott - Balg) for all their help with *Jinxter*', writes Patricia Naylor. Well done Joan and Stuart, and keep up the good work!

● PAWs for thought

"Can the *PAW* use the *Illustrator*?' says Simon Netherwood. The simple answer is no, Simon. *PAW* is a text and disk-only system at the moment. Although Tim Gilbert told the Balg recently that Gilsoft will soon be releasing a graphics package for the *PAW* so that you can have pictures in your games.

● A serious letter from Bob Adams!

"I would like you to know that I support your initiative in encouraging 'Home Grown' producers to send you games for review. This is the way ahead for us, as the commercial software houses withdraw from producing on the CPC or insist on writing fancy operating systems that we do not want. I have started a campaign in *Probe* (oops! – there's that name again) to persuade Home Growers who write on other formats (such as the Spectrum), to convert their games to run on the Amstrad. With all your contacts and clout, perhaps this is an idea you could spread far and wide and get a more favourable response to than I have up to now?

A little guidance, though. When you do a review, don't be too harsh on them and compare it as if you were reviewing an Infocom. If you complain that it really wasn't worth your while loading the adventure because it was so bad etc, (even if true!) all you will achieve is that you will scare off the others, who might just have an absolutely brilliant game but are too frightened to send it for review after what you said previously. Please try to encourage the bad ones to get better, rather than putting them off writing ever again."

I am glad you are still with us Bob, even after the Pilgrim 'Balroged' you for calling him a Skrimball. I am glad you support my reviewing of 'home brew' adventures as many others who have written in have. After all, companies such as Level 9 and Topologika started as 'home brew' and hopefully some of the names today will be as famous in a few years' time as Level 9 is now. Converting games from the Spectrum? What a horrifying idea! But Bob is right, a lot of the Spectrum *PAW* games written on the 128K machines are very impressive and the Balrog would love to see conversions to the Amstrad. In most cases the conversion is just that of a straight type across, so if anyone is interested then write to the Balg at the usual address and I will put you in touch with someone who would love you to convert their game. In the long run you will not only be helping yourself with 'fame and fortune' but will help in keeping the adventure scene alive on the CPC. I also agree with you about reviewing games, but unfortunately although I can try to encourage people to continue, I cannot lie about a game and give it a good review just because it is a 'home brew'. The Balrog receives many games to review and unfortunately I cannot review them all (although I try) and the more professionally put together and tested games will get priority.

Out of this world!

You know that your CPC is one of the most versatile and accomplished micros you can buy, yes? You know that it can even download data from satellites... No? MIKE WORSLEY shows how the weathermen get their pictures...

The term Weather Satellites conjures up images of Jodrell Bank and Goonhilly Downs with their enormous dishes pointed up to the heavens, but, in fact, downloading and displaying satellite pictures on your CPC is fairly simple.

Firstly, though, there are two types of satellite that we can get weather information from:

• GEOSTATIONARY SATELLITES

These orbit the Earth above the equator at an altitude of around 36,000 kms. At this altitude, each orbit takes exactly 24 hours. As this is the same time it takes the Earth to complete one revolution, the satellite appears to remain in the same position all the time – hence the term "geostationary".

The satellite covering the UK, Europe and Africa is called Meteosat and is operated by the European Space Agency. It supplies the pictures shown by the weather men on TV. It transmits information to a ground station where it is computer-enhanced and detail such as coastline is added. It is then beamed back to the satellite and rebroadcast for whoever wants to receive it. It operates around the 1.5 GigaHertz (GHz) range and you do require a small satellite dish to receive these signals, about the same size as a satellite TV dish. (Get one and watch your neighbours go green with envy!)

• POLAR ORBITERS

As their name implies, these satellites orbit the Earth from pole to pole at an altitude of around 800 kms. At this height, one orbit takes around 102 minutes, during which time the Earth will have turned on its axis by 25 degrees.

These 'birds' (as the Americans like to call them) normally pass over the same area of the Earth twice a day and it is possible to get information from them on passes that do not go directly overhead, enabling you to get up to 4 or 5 pictures a day. They also pass over at roughly the same time each day, so it is possible to predict when you can receive signals from them. They are operated by both the USA (NOAA) and USSR (METEOR and COSMOS). The Americans are a lot more liberal with information on their satellites and so these are often the easiest to pick up.

All orbiters transmit raw (unprocessed) pictures to Earth in the 137 to 138 MegaHertz (MHz) band, which is mid-VHF, making them fairly easy to receive with a simple aerial. They also transmit visible light and infra-red information simultaneously, which can be compared to give useful information.

Getting the picture

So how do we get this information onto the screen as a picture that Michael Fish would recognise?

Firstly we need a receiver. Unfortunately, as good as the Amstrad CPCs are, none of them can receive radio signals. For the technically-minded, the receiver must be capable of receiving FM signals in the range 137-138MHz and have an I.F. bandwidth of 50 kHz. It is best to have a phase-lock loop system (to track the doppler shift imparted by the satellite's velocity). If all this means nothing to you, don't worry, you can buy them from several places either ready-built or in kit form with prices varying from £45 to several hundred pounds depending on functions available and whether (excuse the pun) you want to build it yourself or not. Some kits may require specialised testing gear to complete them, so be sure you can finish what you start.



The information coming out of the receiver is in the form of an amplitude modulated 2.4 KHz sub-carrier. It sounds technical, I know, but it just means that the computer still can't do anything with it and we have to decode it first. The heart of the decoder is an analogue-to-digital convertor which samples the signal several thousand times a second and supplies an 8-bit number whose value depends on how big the signal is when sampled. The decoder also supplies a pulse which tells the computer when the start of a line occurs. (NOAA satellites supply a visible line and an infra-red line once a second.)

This 8-bit number is then fed via an inter-

HAMMING IT UP

Satellites transmit their information to Earth in either the VHF or SHF frequency bands. All of them use Frequency Modulation (FM) as this has the advantage of not being affected much by background noise. In FM, the carrier wave frequency is varied by the data being impressed on it. The larger the data signal is in volume, the further away from its centre point will be the carrier frequency. The higher in frequency the data is, the faster the carrier frequency will change. The satellites vary the carrier wave by as much as plus or minus 25KHz, which means that the receiver must be able to pass a signal which can vary 25KHz either side of the frequency it is tuned to. That is, it must have a BANDPASS of 50KHz (2 x 25KHz).

The output from the receiver is an Amplitude Modulated (AM) 2.4KHz signal. Here the size of the carrier is varyied by the size of the data signal, producing what is called an ENVELOPE. The frequency of this envelope is determined by the frequency of the data we are sending. It is a simple matter to remove the information from this carrier wave using simple circuitry (a diode and a few capacitors and resistors). The data is then fed to the A/D convertor in the decoder to be sampled.

Radio design, even at VHF, is quite complicated and at SHF special techniques must be used. Therefore, to receive the Meteosat signals it makes sense to use a DOWNCONVERTOR. This turns the SHF signal into a VHF one that the receiver can handle. By doing this it means you only need one receiver to pick up the two different types of satellite.

The aerial is one of the most important parts of the system. Even with the best receiver in the world, if the aerial is built incorrectly or positioned wrongly you will never get decent pictures. Fortunately, to pick up the NOAA series requires only a crossed dipole with a phasing loop between the two sets of dipoles. This is needed because the satellite is spin-stabilised, and as a result the signal spins with it. Information on aerial design is available from most public libraries. If these can't help you then ask if there are any local radio amateur clubs. A trip to one of these could prove invaluable, as there are always people willing to help with technical advice or possibly even help with location of second hand sets.

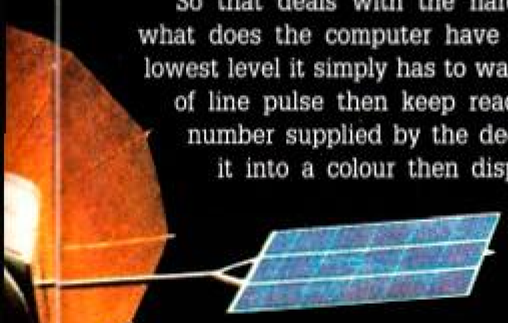
face to the computer. Both the decoder and interface are available from suppliers either ready-built or in kit form for prices of £50 upwards, but because both are basically logic devices they shouldn't be too hard to build for anyone with a basic knowledge of digital systems.

You also need an aerial. The type depends on which type of satellite you want to receive. For geostationary satellites you really need a dish and down-convertor (to bring down the Super High Frequency signals to a frequency the receiver can handle). For orbiters, a simple crossed dipole will be enough to do the job and will pick up pictures from as far east as Turkey and as far west as the United States, depending on where in this country you live and how the aerial is positioned.

One final piece of equipment is needed – a good tape recorder. With the computer switched on, it generates enough interference to blot out the satellite transmissions, so they need to be saved on tape. This also means you can replay them as often as you like to get the best picture. Most modern cassette recorders have Automatic Level Control (ALC) built in, but this has the undesirable effect of compressing the received signal and reducing its contrast. The best type is a stereo recorder with a manual recording control, so that you can set the level yourself. I picked up a good one from a car boot sale for £5.



So that deals with the hardware – now what does the computer have to do? At its lowest level it simply has to wait for the start of line pulse then keep reading the 8-bit number supplied by the decoder, convert it into a colour then display it on the screen. This has to be done in machine code because BASIC is too slow. The program has to chose one of sixteen colours (MODE 0) and display it in one of 640 locations, 640 times a second. At least one supplier, Maplin, provides a program with its system but it is very simple to say the least. Writing your own also means that you can add all those nice little touches such as scrolling, screen dump and zoom – this is done by only drawing every 2nd or 3rd dot or line to expand the information displayed.



Great expectations

So after all this, what can you expect to see? Well, firstly let me warn you that if you are expecting to see the same type of pictures as they show on TV you are going to be a little disappointed for two reasons:

1. The national weather centre, which supplies the pictures used on TV, uses dedicated systems costing thousands of pounds. This enables them to add detail and false colour to enhance the picture, but there again, they can't play *Ninja Scooter* on their machines...

2. The satellites only work in black and white, therefore the more grey levels your system can provide, the more information it can display. (Imagine a black and white TV only showing black and white with no grey levels in between.) The CPC can display a maximum of 16 colours in MODE 0 with a corresponding loss of resolution. Green screen users will find it easier to display the info than colour screen users but the latter, in turn, can add colour to make the sea blue, the land green, etc.

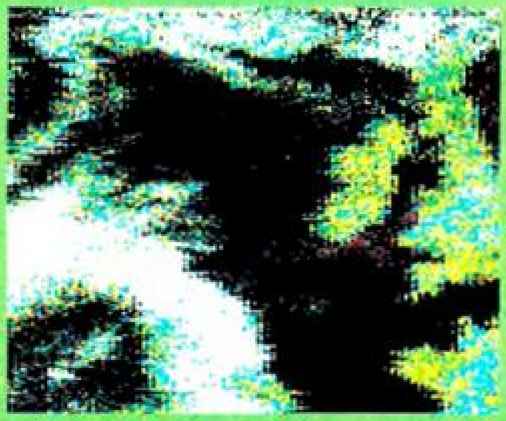
On a clear day, however, most countries are recognisable, and by combining the visible and infra-red information from the NOAA satellites it is possible to work even at night. In May it was possible to tell that the UK was hotter than Italy and parts of North Africa using this method. By picking up and storing the data from the geostationary satellites which transmit every hour, it is possible to produce animated displays to show cloud movement. Meteosat also sends down a 'whole disc' picture occasionally. This shows half the Earth from pole to pole and sometimes test pictures and messages from the ground station, as well as relaying pictures from the GOES satellite operating over America.

Fact-finding

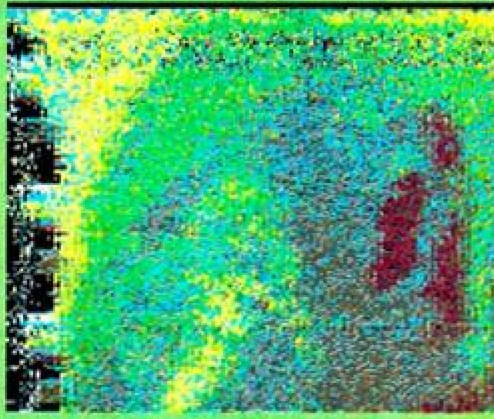
The hardest part is getting information on the subject. There are plenty of books and magazine articles written about it but these tend to be hidden away in the specialist press to do with amateur radio and electronics. I haven't gone into the radio side of things too deeply as it is beyond the scope of this article: however if anybody would like further information please send a SAE envelope to me at the address shown and I will gladly supply it.

The system I use is based on the Maplin one with a few minor modifications. I chose it because it was relatively cheap, you don't require crystals for it to operate (this can mean having to track the satellite by hand-tuning), and it appears to be the only one on the market that was built with the Amstrad in mind – though it will work with any 8-bit computer. It also came with a program which, while being very simple, did show the basic principal of operation. The radio comes as a pre-built and tested circuit board and only requires a few switches and dials adding plus a box to house it. The decoder comes as a kit, though it works out cheaper to buy some of the components elsewhere (especially the mains transformer). If you just want information, then Maplins' back-issue service can supply two issues covering both of the above items.

This is is one aspect of computing that you can take as far as you like – and it does stretch the Amstrad to its limits. The NOAA satellites also send down high resolution pictures showing such detail as runways and villages and the French SPOT satellite is reported to show detail as small as 10 metres across. Who knows, in the near future you may be able to get a picture of yourself on your Amstrad without having to buy a video camera and digitiser just by going outside and looking upwards!



● Cloudwatching from space.



● Ireland and part of the UK (right) howing through the cloud cover in infra red. Dark areas are hot-spots, light areas cool.



● Satellite pictures are broadcast in mono – the false colour is introduced by the CPC.



FOR YOUR INFORMATION...

- You don't need a licence to receive these signals, but it is necessary to get a 'Letter of Authority' from: The Department of Trade and Industry, Radio Regulatory Division, Room 309, Waterloo Bridge House, Waterloo House, London SE1 8UA.
- You can get satellite orbit information by phoning Weatherwatch on 0256 83448 (recorded information service, only available after office hours.
- For further information on the software and system described, write with an SAE to: M Worsley, 23 Thames Drive, Fareham, Hants PO15 6EY.

TYPE - INS

ADAM WARING introduces another keyboard-bashing session

DISC NURSE

Look after your disks with Paolo Cuomo of Brenley, Kent. He has come up with *Disc Nurse*, a BASIC listing that has all the features you would expect to find in a commercial program.

```
{PxAs} 10 REM AMSTRAD DISC NURSE
{HwAt} 20 REM  WRITTERN BY PAOLO CUOMO
{CvBo} 30 REM   WRITTERN ON 6128 BUT !!SHOULD!! WORK ON ALL CPC's
{LvBl} 40 REM   N.B.  ALL REM STATEMENTS MUST BY TYPED IN!
{GvAl} 50 |DISC
{GqAr} 60 ON ERROR GOTO 1400
{MiBk} 70 MODE 2:BORDER 0:INK 0,0:INK 1,26
{NlAm} 80 borderc=0
{KnAm} 90 penc=26
{FvAp} 100 background=0
{MxAl} 110 pres=1
{GjAt} 120 WINDOW #0,1,80,3,21
{PtAs} 130 WINDOW #1,1,80,1,3
{EnBt} 140 PRINT #1,"                    DISC NURSE (v1.0) for CPC 464,664 & 6128"
{ArBr} 150 PRINT #1," ";CHR$(164);"1989 PIONEER SOFTWARE"
{PsAu} 160 WINDOW #2,1,80,22,25
{DtDm} 170 PRINT CHR$(7):PRINT #2:PRINT #2:PRINT #2:PRINT #2:PRINT #2," INSERT DISC TO LOGIN AND PRESS A KEY"
{PjAp} 180 CALL &BB18
{DpAo} 190 CAT :CLS #2
{PtBu} 200 PRINT #2:PRINT #2:PRINT #2,"[E]rase file [R]ename file";
{AmBr} 210 PRINT #2,"      [U]ser change [D]irectory list";
{CwAv} 220 PRINT #2,"[Q]uit program";
{BqBi} 230 PRINT #2,"    [C]hange colour";
{DsAw} 240 PRINT #2,"    [F]ile unerase";
{LvBu} 250 PRINT #2,"    [A]lter drive":PRINT #2,"[H]elp             [|]CPM"
{KiAn} 260 i$=INKEY$
{EpAv} 270 IF i$="" THEN GOTO 260
{DsBl} 280 IF UPPER$(i$)="E" THEN GOSUB 390
{KqBl} 290 IF UPPER$(i$)="R" THEN GOSUB 490
{ItBk} 300 IF UPPER$(i$)="U" THEN GOSUB 570
{BrBn} 310 IF UPPER$(i$)="D" THEN GOSUB 680
{GxBm} 320 IF UPPER$(i$)="Q" THEN GOSUB 770
{JqBl} 330 IF UPPER$(i$)="C" THEN GOSUB 820
{PnBl} 340 IF UPPER$(i$)="F" THEN GOSUB 1030
{LtBn} 350 IF UPPER$(i$)="H" THEN GOSUB 1130
{IwBm} 360 IF UPPER$(i$)="A" THEN GOSUB 1310
{DmBi} 370 IF i$="@" OR i$="|" THEN 1370
{PnAl} 380 GOTO 260
{FjAp} 390 REM ERASE FILE
{FnAm} 400 CLS #2
{FkBq} 410 INPUT #2,"Do you wish to erase all BAcKup files";bfq$
{EpFm} 420 IF UPPER$(bfq$)="Y" THEN INPUT #2,"Please confirm that you wish to ERASE ALL BAcKup files";bfqc$:IF UPPER$(bfqc$)="Y" THEN era$="*.bak":|ERA,@era$:GOTO 190
{LjBx} 430 INPUT #2,"Enter the name of the file you wish to ERASE";eq$
{NrAx} 440 IF eq$="" THEN GOTO 190
{OkCl} 450 PRINT #2,"Please confirm that you wish to ERASE ";eq$;" ";:INPUT #2,eqc$
{IuBs} 460 IF UPPER$(eqc$)="Y" THEN era$=eq$:|ERA,@era$
{OqAm} 470 GOTO 190
{BuAq} 480 CALL &BB18
{ExAp} 490 REM RENAME FILE
{IoAl} 500 CLS #2
{FtCk} 510 INPUT #2,"Enter PRESENT name of file that you wish to RENAME";oldn$
{PuBt} 520 INPUT #2,"Enter NEW name of file that you wish to RENAME";nn$
{HqBn} 530 IF oldn$="" OR nn$="" THEN GOTO 190
{LwCo} 540 PRINT #2,"Please confirm that you wish to RENAME ";oldn$;" to ";nn$:INPUT #2,ans$
{OrBp} 550 IF UPPER$(ans$)="Y" THEN |REN,@nn$,@oldn$
{BsAn} 560 GOTO 190
{LvAo} 570 REM CHANGE USER
{InCi} 580 CLS #2:INPUT #2,"Do you wish to put a file in another USER area";uc$
{AsBl} 590 IF UPPER$(uc$)="Y" THEN GOTO 640
{JnBt} 600 INPUT #2,"Which USER area do you wish to change too";uc
{MkBj} 610 IF uc<0 OR uc>15 THEN GOTO 190
{BuBi} 620 uc=ROUND (uc,0):|USER,uc
{NuAm} 630 GOTO 190
{GsCv} 640 INPUT #2,"Enter the name of the file that you want to put in a differant USER";file$
{AvCl} 650 PRINT #2,"Which USER are do you wish to put ";file$;" in":INPUT #2,ua$
{BlBk} 660 newf$=ua$+":"+file$:|REN,@newf$,@file$
{PqAm} 670 GOTO 190
{JxAs} 680 REM DIRECTORY LISTER
{HoAl} 690 CLS #2
{OqBx} 700 INPUT #2,"Do you wish to see the amount of K each file has";ans$
{JiBm} 710 IF UPPER$(ans$)="Y" THEN GOTO 190
{NvBs} 720 INPUT #2,"Do you wish to see certain files only";ques$
{GnBo} 730 IF UPPER$(ques$)="N" THEN |DIR:GOTO 200
{NoCl} 740 INPUT #2,"Enter file type you want to see.(Eg.)*.bak,hello.*,*.b*.";files$
{EuAq} 750 |DIR,@files$
{NpAl} 760 GOTO 200
{GwAm} 770 REM QUIT
{KqAl} 780 CLS #2
{EqBq} 790 INPUT #2,"Are you certain you wish to QUIT";q$
{NiBm} 800 IF UPPER$(q$)="Y" THEN MODE 2:LIST
{JkAn} 810 GOTO 190
{MwAq} 820 REM COLOUR CHANGE
{NmAl} 830 CLS #2
{DpEw} 840 PRINT #2,"Press 'p' to change pen colour,'s' to change background colour and 'b' to change border colour":PRINT #2,"Press 'r' to return to main menu"
{MjAn} 850 i$=INKEY$
{BrBl} 860 IF UPPER$(i$)="R" THEN GOTO 190
{DkBk} 870 IF UPPER$(i$)="B" THEN GOTO 910
{ErBl} 880 IF UPPER$(i$)="P" THEN GOTO 950
{OrBk} 890 IF UPPER$(i$)="S" THEN GOTO 990
{JuAm} 900 GOTO 850
{HxAt} 910 LET borderc=borderc+1
{FwBk} 920 IF borderc>26 THEN LET borderc=0
{AwAq} 930 BORDER borderc
{AmAn} 940 GOTO 850
{IuAo} 950 penc=penc+1
{KtAu} 960 IF penc>26 THEN penc=0
{OmAm} 970 INK 1,penc
{GuAm} 980 GOTO 850
{ApAt} 990 background=background+1
{NiBm} 1000 IF background>26 THEN background=0
{KvAq} 1010 INK 0,background
{GoAn} 1020 GOTO 850
{OtAo} 1030 REM UNERASE FILE
{DoAn} 1040 CLS #2
{BxAq} 1050 POKE &A701,229
{GiAl} 1060 |DIR
{OwCj} 1070 INPUT #2,"Enter the name of the file you wish to UNERASE";unfile$
{FwBr} 1080 IF unfile$="" THEN POKE &A701,0:GOTO 190
{PnBl} 1090 newfile$="0:"+unfile$:oldfile$=unfile$
{KuAv} 1100 |REN,@newfile$,@oldfile$
{JqAq} 1110 POKE &A701,0
{FsAn} 1120 GOTO 190
{OsAn} 1130 REM HELP
{BiAn} 1140 CLS #2
{NqCq} 1150 PRINT #2,"1)Erase   2)Unerase   3)Rename   4)Change colour   5)Change user   6)Catalogue"
{ClAo} 1160 INPUT #2,i
{EuBl} 1170 ON i GOSUB 1190,1210,1230,1250,1270,1290
{CuAn} 1180 GOTO 190
{HuCo} 1190 CLS #2:PRINT #2,"This option allows you to erase files.Wildcards (*) may be used."
{ErAv} 1200 CALL &BB18:GOTO 1130
{ErHj} 1210 CLS #2:PRINT #2,"This option allows you to unerase files that  have not been writtern over. Wild-cards may not be used.This option does not have a 100% sucsess rate.Files at    the begining of the directory are more likely to unerase."
{LlAu} 1220 CALL &BB18:GOTO 1130
{KkDt} 1230 CLS #2:PRINT #2,"This option allows you to rename files.Wildcards may not be used. No other file must already have the new name."
{BvAv} 1240 CALL &BB18:GOTO 1130
{HrDq} 1250 CLS #2:PRINT #2,"This option allows you
```

```
              to change the colour of the background
              ink,border colour and pen ink."
{IpAv} 1260 CALL &BB18:GOTO 1130
{HtDv} 1270 CLS #2:PRINT #2,"This option allows you
              to put a file into a differant user
              area. It also allows you to look
              through all 16."
{PjAu} 1280 CALL &BB18:GOTO 1130
{OoDo} 1290 CLS#2:PRINT #2,"This option allows you
              to catalogue all or certain files
              only.Wildcards (*) may be used."
{NtAu} 1300 CALL &BB18:GOTO 1130
{IuAr} 1310 REM CHANGE DRIVE
{DoAn} 1320 CLS #2
{GkBl} 1330 INPUT #2,"Which drive (A/B)";drive$
{DoCm} 1340 IF UPPER$(drive$)="B" THEN
              |DRIVE,@drive$ ELSE GOTO 1350
{FmAx} 1350 drive$="A":|DRIVE,@drive$
{OkAm} 1360 GOTO 190
{HnAq} 1370 REM ENTER CP/M
{OiBt} 1380 CLS#2:INPUT #2,"Do you wish to enter
              CPM";ans$
{GtBt} 1390 IF UPPER$(ans$)="Y" THEN |CPM ELSE GOTO
              190
{BlBm} 1400 CLS #2:PRINT #2,"Error in line
              ";ERL:LIST ●
```

CALENDAR

If you want to know what day your birthday will fall on in the year 2000 then type in this *Calendar* program. Courtesy of J Kenworthy, Blackpool.

```
{HrAq} 100 ' Calendar Maker
{NsAt} 110 ' by James R. Kenworthy
{CsAt} 120 ' December 17, 1989.
{JwAj} 130 '
{DiAj} 140 '
{MkAi} 150 '
{FmAj} 160 '
{HrDi} 170 MODE 2:IF INP(&7500) AND &40 THEN
             PRINT"PRINTER NOT ON-LINE":WHILE
             INP(&7500) AND &40:WEND:MODE 2
{BkBp} 180 DEFINT a-z:DIM m$(12),n(12),d$(7):BORDER
             14
{IvAw} 190 LOCATE 36,2:PRINT"CALENDAR"
{DnBs} 200 LOCATE 24,4:PRINT"ENTER ANY YEAR FROM
             1000 TO 9999"
{MoBj} 210 LOCATE 33,6:INPUT"ENTER YEAR :",Y
{GpBi} 220 IF Y<1000 OR Y>9999 THEN 210
{KtBw} 230 FOR A=1 TO 12:READ m$(a),n(a):IF a<8
             THEN READ d$(a)
{OtAk} 240 NEXT
{JsBn} 250 PRINT #8,CHR$(27);"@";:'

RESET PRINTER
{GxBv} 260 PRINT #8,CHR$(27);"W";CHR$(1);:'
             DOUBLE WIDTH MODE
{JqCi} 270 PRINT #8,SPC(9);CHR$(27);"-";CHR$(1);:'
             UNDERLINE MODE
{HqAw} 280 PRINT #8,y;" CALENDAR."
{AsCm} 290 PRINT #8,CHR$(27);"@";CHR$(15):'
 RESET PRINTER THEN CONDENSED MODE
{PmAo} 300 FOR M=1 TO 12
{LsBp} 310 J=((M-1) MOD 4)+1 :ON J GOTO
```

HANDS-FREE TYPING

This month's selection of digital delights can be entered onto your CPC without a single finger!

Modem owners will find these programs appearing on a couple of Bulletin Boards. Viewdata fans will find them on CYNOTEL, while those who prefer the scrolling format can try TUG II. You'll find the telephone numbers onpage 19.

Everything we print in *TYPE-INS* automatically becomes public domain – so if you run a Bulletin Board or PD library then, as long as no profit is made, feel free to make use of the programs on these pages!

```
             320,330,340,350
{CqAv} 320 WINDOW #0,1,20,1,9:GOTO 360
{JwAx} 330 WINDOW #0,21,40,1,9:GOTO 360
{JiAv} 340 WINDOW #0,41,60,1,9:GOTO 360
{CkAx} 350 WINDOW #0,61,80,1,9:GOTO 360
{JjAm} 360 CLS
{PkBj} 370 LOCATE 10-LEN(m$(m))\2,1:PRINT m$(m)
{IwBl} 380 IF y MOD 4 THEN n(2)=28 ELSE n(2)=29
{GoBk} 390 d=0:FOR a=1 TO m-1:d=d+n(a):NEXT
{InAw} 400 d=((y-2)+(y+3)\4+d) MOD 7
{LrBo} 410 FOR a=1 TO 7:LOCATE 1,a+2:PRINT
             d$(a):NEXT a
{LqAr} 420 FOR a=d TO n(m)+d-1
{CkBo} 430 LOCATE ((a\7) MOD 6)*3+4,(a MOD 7)*1+3
{CoAw} 440 PRINT USING "##";a-d+1:NEXT a
{KoAt} 450 IF J<>4 THEN 530
{JkBq} 460 WINDOW #0,1,80,1,25:FOR Y=1 TO 9:FOR X=1
             TO 80
{KpBk} 470 LOCATE X,Y:P$=COPYCHR$(#0):V$=V$+P$:NEXT
             x
{HrBl} 480 s$=SPACE$(10):x$=s$+LEFT$(v$,20)+s$
{JpAu} 490 x$=x$+MID$(v$,21,20)+s$
{FpAt} 500 x$=x$+MID$(v$,41,20)+s$
{HjAt} 510 x$=x$+MID$(v$,61,20):v$=x$
{HoBj} 520 PRINT#8,V$:V$="":NEXT y :PRINT#8:PRINT#8
{EwAo} 530 NEXT M:RUN
{OlBn} 540 DATA
             JANUARY,31,SU,FEBRUARY,28,MO,MARCH,31
{AuBl} 550 DATA TU,APRIL,30,WE,MAY,31,TH,JUNE,30,FR
{NrBt} 560 DATA
             JULY,31,SA,AUGUST,31,SEPTEMBER,30,OCTO
             BER,31
{NvBi} 570 DATA NOVEMBER,30,DECEMBER,31 ●
```

FREE MONEY!

Well, nearly. Each listing printed in *TYPE-INS* win a CASH PRIZE, so don't delay, send it today!

EXUSER

Fifteen users not enough? Adrian Pay from Canterbury has written this patch routine that allows up to 255 user areas. An additional RSX, PUSER, puts the current user area number into an intiger variable. Typing |USER,243:a%=0:|PUSER,@a%:PRINT a$ will print out 243.

```
{OtAr} 1 REM Extended User
{KtAq} 2 REM By Adrian Pay
{BxAp} 3 REM (c) 1989
{MsAl} 10 ln=100
{LqAt} 20 FOR adr=&9000 TO &9050 STEP 13
{GmAr} 30 READ byte$:chk=0
{CoAp} 40 FOR i=0 TO 12
{IqBi} 50 v=VAL("&"+MID$(byte$,i*2+1,2))
{CiAt} 60 POKE adr+i,v:chk=chk+v
{OmAj} 70 NEXT
{BwCi} 80 IF chk<>VAL("&"+RIGHT$(byte$,3)) THEN
           PRINT"ERROR in LINE";ln:STOP
{NwAq} 90 ln=ln+10:NEXT
{FpAx} 100 DATA 210A90010E90CDD1BCC9FCA60E62D
{BiBl} 110 DATA 901690C32090C34090555345D25FB
{HwBk} 120 DATA 50555345D200FE012007DD7E00490
{DlBl} 130 DATA 3201A7C906082138907ECD5ABB4FA
{HlBj} 140 DATA 2310F9C94572726F72070A0DFE51B
{JvBi} 150 DATA 0120E7DD6E00DD66013A01A7774F0
{AlBj} 160 DATA C9F4F1C430F4D12100017EFEC97CE ●
```

ORGAN

Budding musicians need look no further than this amusing little *Electric Organ* from Masood Ahmad of Newcastle. Eight octaves are available by pressing the Up and Down cursor keys.

```
{NjAn} 1 ' 8 Octave Organ
{AvAs} 2 ' by Masood Ahmad
{FsAj} 3 '
{GoAv} 10 BORDER 0:INK 0,0:INK 1,26
{JqAv} 20 DIM note(1000),eff(1000)
{BsAj} 30 '
{FwAo} 40 ENV 1,15,-1,4
{PlAo} 50 ENV 2,15,-1,15
{GsAs} 60 ENV 3,15,-1,2,15,1,2
{DvAq} 70 ENV 4,15,-1,12
{AqAt} 80 ENV 5,15,-1,2,15,-1,2
{JwAs} 90 ENV 6,1,0,10,5,-1,2
{OqAi} 100 '
{MmAr} 110 nc=239:nc2=225:nd=213:
{LjAw} 120 nd2=201:ne=190:nf=179:nf2=169
{GsBn} 130 ng=159:ng2=150:na=142:na2=134:nb=127
{DiAj} 140 '
{OmCt} 150 note$=CHR$(237)+"  "+CHR$(236)+"
             "+CHR$(237)+"  "+CHR$(236)+"  "+CHR$(237)
{CtAm} 160 MODE 2
{KoAx} 170 LOCATE 35,1:PRINT"O R G A N"
{HqAj} 180 '
```

```
{HrAn} 190 ' Draw piano
{BrAj} 200 '
{IqAx} 210 MOVE 0,399:DRAWR 265,0,1
{FxAw} 220 MOVE 0,395:DRAWR 265,0,1
{DoAx} 230 MOVE 0,391:DRAWR 265,0,1
{ItAu} 240 MOVE 0,387:DRAWR 265,0,1
{EtBi} 250 MOVE 350,399:DRAWR 265,0,1
{CkBi} 260 MOVE 350,395:DRAWR 265,0,1
{PrBi} 270 MOVE 350,391:DRAWR 265,0,1
{EwAw} 280 MOVE 350,387:DRAWR 265,0,1
{ImAt} 290 WINDOW#1,1,80,5,20
{JuAr} 300 PAPER#1,1:CLS#1
{KtAm} 310 PEN#1,0
{FxAr} 320 FOR a=0 TO 640 STEP 92
{HuBi} 330 MOVE a,330:DRAWR 0,-280,0:NEXT
{LqBm} 340 FOR a=68 TO 112:MOVE a,331:DRAWR 0,-180
{GrAw} 350 MOVE 92+a,331:DRAWR 0,-180
{DtBi} 360 MOVE 276+a,331:DRAWR 0,-180
{JwAv} 370 MOVE 460+a,331:DRAWR 0,-180
{HlAv} 380 MOVE 368+a,331:DRAWR 0,-180
{OmAk} 390 NEXT
{HtAj} 400 '
{EqAu} 410 LOCATE#1,6,15:PRINT#1,"Z"
{JwAv} 420 LOCATE#1,18,15:PRINT#1,"X"
{HwAv} 430 LOCATE#1,29,15:PRINT#1,"C"
{PrAw} 440 LOCATE#1,40,15:PRINT#1,"V"
{OpAv} 450 LOCATE#1,52,15:PRINT#1,"B"
{GrAv} 460 LOCATE#1,64,15:PRINT#1,"N"
{LsAv} 470 LOCATE#1,75,15:PRINT#1,"M"
{LmAr} 480 PAPER#1,0:PEN#1,1
{FsAv} 490 LOCATE#1,12,7:PRINT#1,"S"
{DvAv} 500 LOCATE#1,23,7:PRINT#1,"D"
{NnAv} 510 LOCATE#1,46,7:PRINT#1,"G"
{PxAv} 520 LOCATE#1,58,7:PRINT#1,"H"
{GxAw} 530 LOCATE#1,69,7:PRINT#1,"J"
{LsBm} 540 LOCATE 20,22:PRINT"OCTAVE ";octave
{DwBm} 550 LOCATE 50,22:PRINT"EFFECT ";effect
{LiAj} 560 '
{CkAp} 570 LOCATE 21,25
{MjBo} 580 PRINT"Press 'R' to Record and 'P' to Re-
         play"
{NmAr} 590 k$=UPPER$(INKEY$)
{HqAu} 600 IF k$=""THEN GOSUB 1090
{ErAv} 610 IF k$="Z"THEN s=nc:GOTO 820
{LrAx} 620 IF k$="S"THEN s=nc2:GOTO 820
{PoAt} 630 IF k$="X"THEN s=nd:GOTO 820
{CpAu} 640 IF k$="D"THEN s=nd2:GOTO 820
{DoAw} 650 IF k$="C"THEN s=ne:GOTO 820
{MpAu} 660 IF k$="V"THEN s=nf:GOTO 820
{NtAw} 670 IF k$="G"THEN s=nf2:GOTO 820
{IoAv} 680 IF k$="B"THEN s=ng:GOTO 820
{DrAu} 690 IF k$="H"THEN s=ng2:GOTO 820
{MnAv} 700 IF k$="N"THEN s=na:GOTO 820
HtAw} 710 IF k$="J"THEN s=na2:GOTO 820
{FlAw} 720 IF k$="M"THEN s=nb:GOTO 820
{BwBj} 730 IF k$=CHR$(240)AND octave<>3 THEN 860
{AiBk} 740 IF k$=CHR$(241)AND octave<>-4 THEN 920
{CqBr} 750 IF k$=CHR$(243)AND effect<>6 THEN
         effect=effect+1
{GnBq} 760 IF k$=CHR$(242)AND effect<>0 THEN
         effect=effect-1
{BtBv} 770 IF k$="R"THEN rec=1:LOCATE 21,25:PRINT
         STRING$(40,32):x=0
{DwBv} 780 IF k$="R"THEN LOCATE 28,25:PRINT"Press
         [SPACE BAR] to stop"
{OwBp} 790 IF k$=CHR$(32)AND rec=1 THEN rec=0:GOTO
         570
{KjAq} 800 IF k$="P"THEN 980
{DsAn} 810 GOTO 590
{FuAs} 820 SOUND 1,s,50,15,effect
{ErBo} 830 IF rec=1 AND x=999 THEN rec=0:GOTO 570
{HsBs} 840 IF rec=1 THEN
         note(x)=s:eff(x)=effect:x=x+1
{NwAm} 850 GOTO 590
{PuAv} 860 nc=nc/2:nc2=nc2/2:nd=nd/2:
{OpAs} 870 nd2=nd2/2:ne=ne/2:nf=nf/2
{PqAx} 880 nf2=nf2/2:ng=ng/2:ng2=ng2/2
{NvAw} 890 na=na/2:na2=na2/2:nb=nb/2
{HsAp} 900 octave=octave+1
{JuAl} 910 GOTO 590
{EvAv} 920 nc=nc*2:nc2=nc2*2:nd=nd*2
{PjAv} 930 nd2=nd2*2:ne=ne*2:nf=nf*2
{OtBl} 940 nf2=nf2*2:ng=ng*2:ng2=ng2*2
{KlAv} 950 na=na*2:na2=na2*2:nb=nb*2
{PwAo} 960 octave=octave-1
{DqAm} 970 GOTO 590
{EiAj} 980 '
{AkAm} 990 ' Replay
{BqAj} 1000 '
{IvBj} 1010 LOCATE 21,25:PRINT STRING$(40,32)
{JlBj} 1020 LOCATE 33,25:PRINT"* Re-playing *"
{DrAp} 1030 FOR a=0 TO x
{JlAx} 1040 SOUND 1,note(a),50,15,eff(a)
{IkAn} 1050 NEXT:GOTO 570
{HwAj} 1060 '
{CsAp} 1070 ' Musical notes
{KiAj} 1080 '
{OwAx} 1090 r=INT(RND*9):LOCATE 35+r,3
{OlBi} 1100 PRINT" ":FOR d=1 TO 150:NEXT:
{BkAu} 1110 LOCATE 35,3:PRINT note$
{PiAj} 1120 '
{OlAu} 1130 LOCATE 28,22:PRINT octave
{GoAx} 1140 LOCATE 58,22:PRINT effect
{FsAn} 1150 RETURN ●
```

SPLIT MODES

Andrew Price from Dunstable hasmanaged to split the CPC's screen in two. MODE 1 at the top and MODE 2 at the bottom. Clever stuff indeed.

```
{DxAs} 1 ' Split Modes for CPC
{BiAu} 2 ' by Andrew Price 19/12/89
{PvAr} 3 ' Amstrad Action 1990
{FtBm} 10 DATA 3A,EC,BD,FE,F7,28,45,FE,17,28,582
{LwBn} 20 DATA 4D,21,5F,60,06,81,11,17,60,CD,309
{BnBl} 30 DATA D7,BC,C9,F3,D9,CB,89,CB,C1,ED,7F5
{AlBm} 40 DATA 49,D9,FB,3E,04,32,71,60,21,68,3EB
{NnBl} 50 DATA 60,06,81,11,32,60,CD,E0,BC,C9,4BC
{IjBn} 60 DATA 3A,71,60,3D,32,71,60,B7,C0,F3,4B5
{GxBm} 70 DATA D9,CB,89,CB,81,ED,49,D9,FB,21,6A4
{CvBn} 80 DATA 32,60,CD,E6,BC,C9,21,EC,BD,3E,5D2
{GpBk} 90 DATA 0E,77,23,3E,0B,77,18,B3,3E,2E,29F
{ImBi} 100 DATA 32,EC,BD,18,AC,00,00,00,00,00,29F
{KjBv} 110 n=10:a=&6000:l=10:WHILE l<110:GOSUB
         120:WEND:GOTO 160
{HsBs} 120 cs=0:FOR x=1 TO n:READ
         v$:v=VAL("&"+v$):POKE a,v
{NqBm} 130 cs=cs+v:a=a+1:NEXT:READ c$:c=VAL("&"+c$)
{HoBr} 140 IF c<>cs THEN PRINT"Data error in line
         ",l:END
{MrAp} 150 l=l+10:RETURN
{KmBt} 160 CALL &6000:CLS:MODE 1:LOCATE
         15,4:PRINT"MODE 1 HERE!!"
{LkBp} 170 MODE 0:LOCATE 5,20:PRINT"AND MODE 0 IS
         HERE!"
{PjAp} 180 CALL &BB18 ●
```

FILE PROTECTOR

If you want to protect your data from prying eyes then Masood Ahmad's File protector is for you. Only your secret password will unlock the encrypted information…

```
{IqAs} 1 ' ASCII FILE PROTECTOR
{AvAs} 2 ' by Masood Ahmad
{FsAj} 3 '
{IxAl} 10 MODE 2
{JpAv} 20 BORDER 0:INK 0,0:INK 1,26
{CtAp} 30 DIM b$(200)
{AmAq} 40 PAPER 1:PEN 0
{HnBm} 50 LOCATE 30,1:PRINT"ASCII FILE PROTECTOR"
{GuAp} 60 PAPER 0:PEN 1
{LtAr} 70 WINDOW 1,80,2,25
{HuAo} 80 PRINT:PRINT
{FoAv} 90 PRINT TAB(38)"Menu":PRINT
{MnAw} 100 PRINT TAB(33)"L - Load file"
{MpAv} 110 PRINT TAB(33)"C - Code file"
{LtBi} 120 PRINT TAB(33)"D - Decode file"
{HlAx} 130 PRINT TAB(33)"R - Re-save file"
{ImAw} 140 PRINT TAB(33)"V - View file"
{OmAr} 150 k$=UPPER$(INKEY$)
{MiAq} 160 IF k$=""THEN 150
{JpAs} 170 IF k$="L"THEN 620
{OxAr} 180 IF k$="C"THEN 250
{DqAq} 190 IF k$="D"THEN 410
{KsAq} 200 IF k$="R"THEN 820
{OqAr} 210 IF k$="V"THEN 560
{MjAm} 220 GOTO 150
{GkAj} 230 '
{AtAn} 240 ' Code file
{JpAk} 250 CLS
{DmAu} 260 PRINT"CODE FILE":PRINT
{BqAn} 270 GOSUB 940
{KxBk} 280 CLS:LOCATE 33,8:PRINT"- Please wait -"
{PrAw} 290 LOCATE 35,6:PRINT"* CODING *"
{LsAn} 300 FOR a=0 TO z
{JrAu} 310 FOR x=1 TO LEN(b$(a))
{LqAu} 320 c=ASC(MID$(b$(a),x,1))
{CnAt} 330 IF c+t>255 THEN c=32
{MwAw} 340 c=c+t:MID$(b$(a),x,1)=CHR$(c)
{PiAv} 350 LOCATE 39,10:PRINT z-a
{JvAp} 360 NEXT:NEXT:CLS
{HpBq} 370 PRINT:PRINT UPPER$(file$);" ";"HAS BEEN
         CODED"
{CjBt} 380 PRINT:PRINT"Press any key":CALL
         &BB18:CLS:GOTO 80
{NwAj} 390 '
{GoAo} 400 ' Decode file
{ExAk} 410 CLS
{MoBj} 420 PRINT"DECODE FILE":PRINT:GOSUB 940
{GwBl} 430 CLS:LOCATE 33,8:PRINT"- Please wait - "
{CnBl} 440 LOCATE 34,6:PRINT"* DECODING *"
{KmAo} 450 FOR a=0 TO z
{PuAw} 460 IF LEN(b$(a))=0 THEN 470
```

```
{NrAt} 470 FOR x=1 TO LEN(b$(a))
{CrAv} 480 c=ASC(MID$(b$(a),x,1))
{HuAx} 490 c=c-t:MID$(b$(a),x,1)=CHR$(c)
{IwAu} 500 LOCATE 39,10:PRINT z-a
{JvAo} 510 NEXT:NEXT:CLS
{MwBq} 520 PRINT:PRINT UPPER$(file$);" ";"HAS BEEN
       DECODED"
{OnBt} 530 PRINT:PRINT"Press any key":CALL
       &BB18:CLS:GOTO 80
{AmAk} 540 '
{GiAm} 550 ' View file
{FxAl} 560 CLS
{OqAp} 570 FOR a=0 TO z:l=l+1
{ArBk} 580 IF l=22 THEN CALL &BB18:l=0
{BiAr} 590 PRINT b$(a):NEXT
{EqAx} 600 PRINT:PRINT"* END OF FILE *"
{JqBj} 610 CALL &BB18:l=0:CLS:GOTO 80
{OtAj} 620 '
{HkAj} 630 '
{MsAo} 640 ' Load file
{CxAl} 650 CLS
{CqAu} 660 INPUT"Enter filename: ",f$
{JwAv} 670 IF f$=""THEN CLS:GOTO 80
{FvAm} 680 file$=f$
{LpBr} 690 PRINT:PRINT"Please insert disc and hit
       any key"
{HkAv} 700 CALL &BB18:OPENIN file$
{AuAr} 710 WHILE NOT EOF
{CjAu} 720 IF z=500 THEN 790
{LpAp} 730 LINE INPUT#9,a$
{KtAm} 740 b$(z)=a$
{KpAs} 750 IF b$(z)=""THEN 780
{BvCl} 760 IF MID$(b$(z),1,1)<>CHR$(34)AND
       MID$(b$(z),LEN(b$(z)),1)<>CHR$(34)THEN
       780
{FmAw} 770 b$(z)=MID$(b$(z),2,LEN(b$(z))-2)
{FsAn} 780 z=z+1:WEND
{MwAn} 790 CLOSEIN
{IqBq} 800 PRINT:PRINT"* File loaded press any key
       *"
{EvAx} 810 CALL &BB18:CLS:GOTO 80
{BjAj} 820 '
{OtAm} 830 ' Re-save
{JkAl} 840 CLS
{KwBi} 850 PRINT:PRINT"Saving...";f$::PRINT
{MnAu} 860 IF f$=""THEN CLS:GOTO 80
{OoAl} 870 file$=f$
{LnAo} 880 OPENOUT file$
{OiAn} 890 FOR a=0 TO z
{EmAp} 900 WRITE#9,b$(a)
{AiAp} 910 NEXT:CLOSEOUT
{PsBm} 920 PRINT"* File saved press any key *"
{OlAw} 930 CALL &BB18:CLS:GOTO 80

{NqAj} 940 '
{LiAr} 950 ' Password routine
{LsAk} 960 t=0
{JvAv} 970 INPUT"Enter password: ",pswd$
{EuAt} 980 pswd$=UPPER$(pswd$)
{ApAw} 990 IF pswd$=""THEN CLS:GOTO 80
{ItAu} 1000 FOR x=1 TO LEN(pswd$)
{OrAv} 1010 t=t+ASC(MID$(pswd$,x,1))
{HoAn} 1020 NEXT:t=t/x
{MuAn} 1030 RETURN ●
```

CONNECTOR FOUR

Nine-year-old Stephen Thompson of Bournmouth has computerised that classic strategy game *Connect Four*. This two-player version records the game moves, and can replay them so you can learn by your mistakes.

```
{IxAp} 10 'Connect four
{OlAq} 20 'By Stephen Thompson
{HuAl} 30 'Set up
{KoBi} 35 na1$="Player 1":na2$="Player 2"
{OjAl} 40 MODE 1
{HqBu} 50 DIM co(7,6),moves(42):WINDOW#1,20,30,3,1-
1:PAPER #1,0:CLS#1
{LtAr} 60 BORDER 0:fl=0:turn=1
{CrBj} 70 INK 0,0:INK 1,6:INK 2,24:INK 3,26
{OpBq} 80 PEN 3:PRINT SPACE$(10);"*** Connect four
       ***"
{KlAt} 90 FOR x=2 TO 12 STEP 2
{BxAm} 100 FOR y=3 TO 8
{PpAs} 110 LOCATE x,y:PRINT"-"
{PtAm} 120 NEXT y,x
{FnBt} 130 LOCATE 1,10:PRINT"1 2 3 4 5 6 7":IF fl=1
       THEN 160
{HuCi} 140 LOCATE 1,15:INPUT"Name of player
       1:",pl1$:IF pl1$="" THEN pl1$=na1$
{GqCm} 150 LOCATE 1,16:INPUT"Name of player
       2:",pl2$:IF pl2$="" THEN pl2$=na2$
{LuAk} 160 pl=1
{AvBi} 170 LOCATE 1,15:PRINT SPACE$(80)
{BkAp} 180 LOCATE 1,15
{BwAn} 190 'Input row
{DuBn} 200 IF pl=1 THEN PRINT pl1$ ELSE PRINT pl2$
{PjAs} 210 PRINT"Your turn"
{ItBm} 220 IF fl=1 THEN a$=STR$(moves(turn)):GOTO
       260
{JqBn} 230 LOCATE 1,21:PRINT"Which row ? Press 1 to
       7"
{DkAn} 240 a$=INKEY$
{JmAw} 250 IF a$<"1" OR a$>"7" THEN 240
{JkAs} 260 PEN#1,pl:PRINT#1,a$;
{HvBm} 270 a=VAL(a$):IF fl=0 THEN moves(turn)=a
{ClAu} 280 'Check if row is full
{OoAk} 290 b=0
{NvDt} 300 b=b+1:IF b=7 THEN LOCATE 1,22:PRINT"Row
       full"+CHR$(7):FOR n=1 TO
       2000:NEXT:LOCATE 1,22:PRINT
       SPACE$(40):GOTO 230
{IxAx} 310 IF co(a,b)<>0 THEN 300
{CqAq} 320 co(a,b)=pl
{CuAp} 330 'Print counter
{PjCv} 340 LOCATE a*2-1,8-b+1:PEN pl:PRINT"O";:PEN
       3:IF fl=1 AND rsp>0 THEN FOR n=1 TO
       rsp*100:NEXT
{DxAv} 350 'Check for horizontal line
{KmAq} 360 FOR x=1 TO 4
{AnAn} 370 FOR y=1 TO 6
{JwAw} 380 IF co(x,y)<>pl THEN 450
{IoAp} 390 ct=1:x1=x
{CnAl} 400 x1=x1+1
{FjAx} 410 IF co(x1,y)<>pl THEN 450
{ElAn} 420 ct=ct+1
{MmAt} 430 IF ct=4 THEN 930
{OsAm} 440 GOTO 400
{ClAn} 450 NEXT y,x
{NjAt} 460 'Check for vertical line
{AsAo} 470 FOR y=1 TO 3
{MqAq} 480 FOR x=1 TO 7
{NqAw} 490 IF co(x,y)<>pl THEN 560
{OlAn} 500 ct=1:y1=y
{CtAm} 510 y1=y1+1
{BtAw} 520 IF co(x,y1)<>pl THEN 560
{CuAo} 530 ct=ct+1
{NwAu} 540 IF ct=4 THEN 930
{LuAm} 550 GOTO 510
{HxAn} 560 NEXT x,y
{AvAt} 570 'Check for slope right
{CmAo} 580 FOR y=4 TO 6
{JrAo} 590 FOR x=4 TO 7
{OtAv} 600 IF co(x,y)<>pl THEN 670
{LiAr} 610 ct=1:x1=x:y1=y
{HnAp} 620 x1=x1-1:y1=y1-1
{LuAx} 630 IF co(x1,y1)<>pl THEN 670
{HpAn} 640 ct=ct+1
{FsAu} 650 IF ct=4 THEN 930
{FkAm} 660 GOTO 620
{FvAn} 670 NEXT x,y
{MuAs} 680 'Check for slope left
{EmAo} 690 FOR y=4 TO 6
{LiAp} 700 FOR x=1 TO 4
{HmAw} 710 IF co(x,y)<>pl THEN 780
{MsAr} 720 ct=1:x1=x:y1=y
{PqAn} 730 x1=x1+1:y1=y1-1
{NqAw} 740 IF co(x1,y1)<>pl THEN 780
{CmAo} 750 ct=ct+1
{DqAu} 760 IF ct=4 THEN 930
{KuAm} 770 GOTO 730
{JvAm} 780 NEXT x,y
{EmAr} 790 'Checks for draw
{DqAm} 800 ct=0
{BxAq} 810 FOR n=1 TO 7
{PvBi} 820 IF co(n,6)<>0 THEN ct=ct+1
{EqAt} 830 NEXT:IF ct<>7 THEN 880
{NpBj} 840 LOCATE 1,24:PRINT"It's a draw!!!"
{GlBl} 850 PRINT"Press [SPACE] to continue"
{AkAu} 860 WHILE INKEY(47)=-1:WEND
{LqAm} 870 GOTO 1020
{HqAp} 880 'Change players
{GpAu} 890 pl=pl+1:turn=turn+1
{IvAt} 900 IF pl=3 THEN pl=1
{NiAl} 910 GOTO 170
{FjAs} 920 'Print you've won
{EwBk} 930 na1$=pl1$:na2$=pl2$:LOCATE 1,24
{GnBk} 940 IF pl=1 THEN a$=pl1$ ELSE a$=pl2$
{NjAp} 950 PRINT a$+" wins!!!"
{KlBk} 960 PRINT"Press [SPACE] to continue"
{FoBo} 970 'Flashes counters until [SPACE] is
       pressed
{OuAr} 980 WHILE INKEY(47)=-1
{LtBj} 990 RANDOMIZE TIME:INK pl,INT(RND*27)
{AqAs} 1000 FOR n=1 TO 250:NEXT
{MtAk} 1010 WEND
{GtBu} 1020 'Asks if you want another game or
        replay last game
{HtCx} 1030 CLS:PRINT"Do you want another
        game(Y/N)?":PRINT"Or press R to replay
        the last game"
{JvAr} 1040 a$=LOWER$(INKEY$)
{JvBk} 1050 IF a$="n" THEN ERASE co,moves:END
{CkBo} 1060 IF a$="y" THEN ERASE co,moves:GOTO 40
{HwAw} 1070 IF a$="r" THEN 1090
{NuAn} 1080 GOTO 1040
{ArCq} 1090 INPUT"Replay speed(0-20,0 fast 20
        slow):",rsp:IF rsp<0 OR rsp>20 THEN
        1090
{CsBr} 1100 CLS:CLS#1:ERASE co:DIM
        co(7,6):fl=1:turn=1:GOTO 70 ●
```

ENOUGH SPACE?

If some of your checksum codes don't add up, it might be because of spaces included in REM statements or text printed on-screen. Worth a look before you start panicking over syntax...

TURBOSOFT

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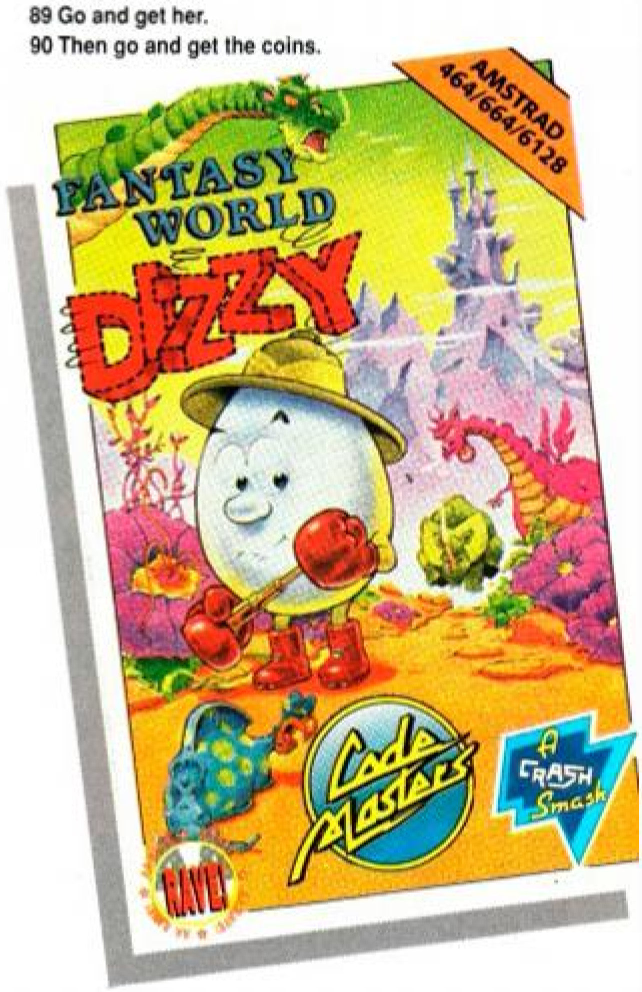
CHEAT MODE

Trenton gets in a spin with the complete *Dizzy* solution...

FANTASY WORLD DIZZY

It's happening again! No sooner is a new *Dizzy* released, than the *AA* switchboard gets jammed with calls from people on the verge of panic. So, for the first time, here's the complete solution to *Fantasy World Dizzy*.

1 Give the APPLE to the TROLL.
2 Take the JUG OF WATER and throw it on the FIRE.
3 Take the LOAF and go left.
4 Get the BOULDER and exit top right.
5 Drop the LOAF as near the RAT as possible.
6 Follow the RAT and exit top right.
7 Drop the BOULDER at the bottom of the stairs.
8 Walk up the stairs and stand on the second stair down.
9 Jump left, walk left and then pull the LEVER.
10 Jump right, into the BANQUET HALL, talk to DENZIL and get the ROPE.
11 Go to the ENTRANCE HALL and drop the ROPE.
12 Go to the BANQUET HALL and jump on the table.
13 Walk to the far left and then jump further left.
14 Then jump right twice into the CASTLE STAIRCASE.
15 Walk up both sets of stairs and jump left at the top into the ATTIC.
16 Come back down the stairs and go right.
17 Stop as soon as you enter the room, and then jump right.
18 Get the KEY and go into the ENTRANCE HALL .
19 Drop the BONE, get the rope, and go right to the ALLIGATOR
20 Walk as far as you feel safe and wait.
21 The ALLIGATOR bites three times and then stops.
22 On the closing of the second snap, jump right.
23 Drop the ROPE, DIZZY does the rest.
24 Jump right and get the BOULDER.
25 Go right and stop by the tree, drop the KEY.
26 Go back to the ENTRANCE HALL and get the BONE.
27 Then go left across the MOAT AND PORTCULLIS.
28 Keep going left until you fall down, then go right at the BOULDER.
29 Get the BOULDER and drop the BONE.
30 Walk left and and then jump right above the DEN and wait.
31 Then the RHINO will walk into his DEN and stay there.
32 Jump from where you are and keep going to the GUARD HOUSE.
33 Stop at the tree stump.
34 When crossing this screen wait until the HAWK is behind you.
35 Jump up the boulders and stop at the broken bridge.
36 Drop the two BOULDERS and get the third and do the same.
37 When the third BOULDER has been dropped walk left.
38 Jump from the piece of wood and jump left to get the KEY.
39 Walk left and keep going until you come to the PIER.
40 There's a hole in the PIER, so jump over it.
41 Go left and talk to DOZY to obtain the SLEEPING POTION.
42 Make your way back to the WIDE EYED DRAGON.
43 Drop the potion near the DRAGONS head and wait for it to fall.
44 Then get the KEY and go left to the well and get the RED BAG.
45 Jump right twice and keep walking right.
46 When you see the LITTLE COW pick it up and walk right.
47 Go the base of the VOLCANO and pick the up the KEY that's there.
48 Now with three KEYS walk left until you reach the LIFT HUT.
49 Try all the keys on the motors and then exit the way you came in.
50 Go to the ALLOTMENT and jump onto the platform in the tree.
51 Then go to the edge and jump left.
52 Walk left and jump left, followed by a right and left jump.
53 You should have rolled into the DOZY HUT screen and go to the LIFT.
54 Get off at the top and walk right and leave the screen.
55 Walk right and stop at the TORCH, then jump straight up
56 Keep walking right until you can see the DOOR KNOCKER and get it.
57 Go back to the LIFT, then find and talk to GRAND DIZZY and pick up the CROWBAR.
58 Go left and pick up the PICKAXE, then go to the WELL.
59 Drop the CROWBAR, wait for DIZZY to do his stuff, and then fall in.
60 CHECKLIST – DOOR KNOCKER, PIGMY COW, and PICKAXE.
61 Go left, and wait for the SHOPKEEPER, when he appears, give him the COW.
62 Then get the BEAN and go left, jumping the WELL.
63 Jump onto the platform and go right into the CHAPEL.
64 Jump right onto the first wall.
65 Then jump right again.
66 Fall left.
67 Then jump right and get the KEY.
68 To get onto the wall, jump left, jump right, and jump left again.
69 Fall up!
70 Go to the CASTLE STAIRCASE and move to the door.
71 Drop the DOOR KNOCKER and enter to get the BUCKET.
72 Go to the BASE of the VOLCANO and drop the BUCKET in the water.
73 Get the BUCKET, go to the ALLOTMENT, drop the BEAN and BUCKET in the MANURE.
74 Make your way up the BEANSTALK to the first cloud.
75 Jump right twice, jump left and then jump right a further five times.
76 Jump over the gap in the clouds and get the EGG.
77 Make your way to the LIFT CONTROL HUT and use the last key.
78 Fall down the hole and go down on the LIFT, then drop the EGG.
79 Wait for the DRAGONS head to fall and then go right.
80 Go to the middle of the next room.
81 Jump left and then jump right and drop the PICKAXE.
82 Go left and get the CARPET.
83 Go right.
84 Keep going until you meet the TROLL.
85 Now go to the CLOUD CASTLE.
86 Be careful of the spikes and drop the CARPET.
87 Jump right, jump left, then walk left to the FIRST LITTLE BRICK.
88 Jump right and stand by the LEVER, and down comes DAISY.
89 Go and get her.
90 Then go and get the coins.



CHEAT MODE COUP!

After months of delicate negotiations, *AA* is proud to announce that Phil Howard – of *Insider Dealing* fame – will be taking the *Cheat Mode* helm as from next month.

So now your pokes will be dealt with by the Mapperely Maestro himself, who will be re-vamping the section to make it easier than ever to beat games. This does mean we are no longer able to deal with *Cheat Mode* enquires by phone however, but we'll pass on all your suggestions, requests, hints, tips, cheats, pokes, Multiface pokes and questions to Phil, ASAP.

So if there's something you'd like to see, an area you like to receive more attention, or anything cheat-based you want to know about, then drop Phil a line by way of us and he'll be only too happy to help. You can help take Britain's leading CPC cheat column further than ever before!

VAMPIRE

Classic Collection

Stephen Fernie of Inverness wanted a good poking for the Codemasters classic *Vampire*. Ever willing to serve, *AA* researchers scoured the archives and unearthed this early **Phil Howard** ditty. **Tape Method 1**

```
{BmAt} 1 ' Vampire – tape
{IxAp} 2 ' by Phil Howard
{MiAt} 3 ' Amstrad Action    July 87
{MkAs} 10 DATA 21,4f,bf,36,0b,23
{JiAt} 20 DATA 36,be,c3,00,bf,21
{JvAu} 30 DATA 5b,2d,36,34,c3,88
{DqAu} 40 DATA 13,21,e2,39,36,c3
{GjAt} 50 DATA 23,36,29,23,36,be
{KnAs} 60 DATA 21,40,00,e5,21,00
{KmAu} 70 DATA bb,e5,c3,b7,39,e5
{AjAu} 80 DATA 21,91,01,36,d0,23
{BwAt} 90 DATA 36,6f,23,36,cd,e1
{OkAo} 100 DATA f1,f3,c9
{MtAr} 110 y=0: MEMORY &2000
{HmAs} 120 FOR x=&BE00 TO &BE38
{FvAv} 130 READ a$: a=VAL("&"+a$)
{NkAs} 140 POKE x,a: y=y+a: NEXT
{HtAs} 150 IF y<>&171C THEN 170
{GmAw} 160 LOAD"vampire": CALL &BE13
{EwAr} 170 print data error
```

WIZARD WILLY

Codemasters' new Cartoontime games may look like kids' stuff, but, they're tough to play. So **Graham Smith of Street** is ready and willing to give all you sorcerer's apprentices a helping hand. The poke gives you infinite lives, just like magic! **Tape Method 1**

```
{PnAr} 1 ' Wizard Willy  -tape-
{HvAq} 2 ' By Graham Smith
{EwAs} 3 ' Infinite lives
{JsAm} 4 ' Method 1
{FuAj} 5 '
{MuAu} 10 DATA 2a,38,bd,22,20,be
{GpAt} 20 DATA 21,37,bd,36,c3,23
{NjAt} 30 DATA 36,1b,23,36,be,21
{LiAt} 40 DATA 40,00,e3,11,00,bb
{GnAr} 50 DATA c3,4a,3a,af,32,1c
{JsAn} 60 DATA 1c,cf
{PnAs} 70 FOR j=0 TO 31:READ a$
{DaAt} 80 x=VAL("&"+a$):y=y+x
{PxAt} 90 POKE j+48640,x:NEXT j
{BpAr} 100 IF y<>2807 GOTO 130
{PxAq} 110 MEMORY 14900:LOAD"
{HkAp} 120 CALL 48640
{KiAq} 130 PRINT"data error
```

GHOSTBUSTERS II

Having trouble with *Ghostbusters II*? Then here's the essential step-by-step *AA* guide to the first level of Activision's *Mastergame*...



1: As soon as you enter the shaft get the PKR bomb on the right-hand ledge.



2: The best way to deal with the 'grabbers' is to give them a quick blast as you approach from above.



3: The first part of the slime scooper is on the right-hand shelf – make sure you get it.



4: Stop of on the shelf to pick up 'courage' – and grab yourself a breather.



5: Get the extra shield under the grabber – you'll need it later on!



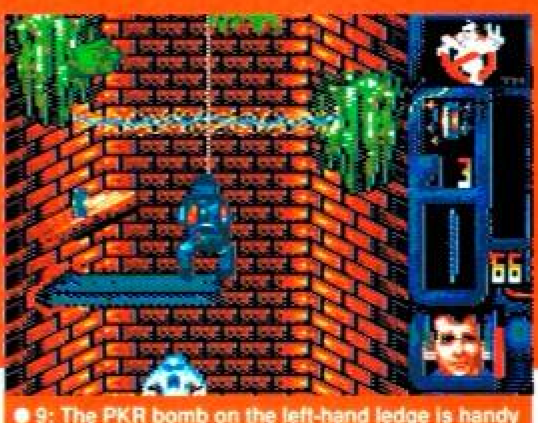
6: There's a handy recharge for your pack on the left-hand shelf.



7: Another part of the slime scooper is on the right-hand side.



8: There's yet more power available under the grabber on the left.



9: The PKR bomb on the left-hand ledge is handy for warding off rope cutters, while you collect the slime later on.



● 10: Everything's going to work out just fine if you can get hold of the courage, top left, and the PKR bomb, bottom left.



● 11: It's the last stop for courage on the platform, right, before it's slime time.



● 12: The last vital piece of the puzzle is the the beaker which sits on the right-hand ledge.



● 13: It helps to have saved as many PKR Shields as possible if you want to be a success in the slime collection stakes. Just hover and the scoop will drop down automatically.

Lost Caves

The most hyped game in *AA* history gets yet another mention! This time because **Graham Smith** has been busy poking away into the depths of the *Lost Caves*. Much to Adam's delight, it means he can now finish his own game – with the help of infinite lives of course!

Tape Method 1

```
{EuAr} 1 ' Lost Caves  -tape-
{HvAq} 2 ' By Graham Smith
{EwAs} 3 ' Infinite lives
{JsAm} 4 ' Method 1
{FuAj} 5 '
{JlAt} 10 DATA c4,14,ac,af,32,21
{EsAu} 20 DATA 11,fb,c9,3e,8f,32
{HnAv} 30 DATA 7f,41,3e,b3,32,cc
{BwAu} 40 DATA 41,21,62,46,36,92
{HkAt} 50 DATA 2b,36,83,2b,36,df
{AuAp} 60 DATA c3,05,40
{GjAs} 70 FOR j=0 TO 32:READ a$
{DsAt} 80 x=VAL("&"+a$):y=y+x
{PxAt} 90 POKE j+48640,x:NEXT j
{MuAs} 100 IF y<>3335 GOTO 130
{HiAr} 110 MEMORY &3FFF:LOAD"
{EpAp} 120 CALL 48649
{KiAq} 130 PRINT"data error ●
```





If you found *Hard Drivin'* hard goin' then **Neil Roche** is the man to see. He's given tape drivers of Domark's car sim' infinite time in which to complete their lap. So now you can see the whole course and crash where you like!

Tape Method 2 – Skip the first file

```
{FnAx} 10 OPENOUT"!d":MEMORY &7FF:CLOSE OUT
{DqAo} 20 LOAD"!",&800
{GiAo} 30 CALL &800
{BjAo} 40 LOAD"!",&1000
{DwAo} 50 LOAD"!",&5000
{AoAo} 60 CALL &803
{KiAo} 70 LOAD"!",&5000
{IjAp} 80 POKE &18BF,0
{KuAo} 90 CALL &806 ●
```



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AA

Anatomy of an RSX

Resident System Extensions could be the best thing to happen to your CPC since banked RAM (whatever that is). DAVID HOLMES explains why...

One of the most powerful features of the Amstrad CPC is its ability to develop Resident System Extensions (RSXs), machine code routines which can be installed in the memory and then used and handled as BASIC commands.

It is possible to write simple routines which add to or modify the existing commands supplied in the BASIC interpreter or to create sophisticated systems which can be accessed easily from within a BASIC program.

Quite professional results can be obtained with very simple code which can then be developed as the programmer's expertise increases.

The major advantages of the RSX over CALLing machine code routines are the error checking on the command name done by BASIC and the increased readability of programs using RSXs.

An error in a CALL statement will generally result in a crash. A typing error in a properly developed RSX will either give an 'Unknown Command' error or an error message delivered by the routine itself. Adequate error trapping is an important feature of any program but is especially worthwhile with machine code!

The command names are chosen by the programmer and usually reflect the function of the routine. This makes listings much easier to follow than if there are many CALLs to memory addresses. The disadvantages of RSXs are that for very short routines the additional code needed to handle the command name may be longer than the actual working program. It is also more difficult to allow the code to be relocatable although there are various ways around this.

The RSX command is prefixed by the '|' character (Shift @). This tells the BASIC interpreter that it must search for an external command using the firmware routine KL_FIND_COMMAND at &bcd4. If the command specified is found the named routine is entered. If it is not found the error message 'Unknown Command' is given and the BASIC program stops.

Listing 1 is a BASIC loader for the assembler program in listing 2. This is a fairly simple screen fading program which is worth examining in some detail as it illustrates some of the features of the system.

The command to be set up is:

```
|FADE,pen,rate
```

where pen is the pen number to use in filling the screen and rate is a number between 0 and 255 which determines the rate and pattern of screen filling.

The first section deals with the setting up of an RSX. The new command or commands must be 'logged on' to the system using the firmware call KL_LOG_EXT at &bcd1. This call requires that the BC register pair be loaded with the address of the RSX command table (which will be discussed below) and that the HL register pair be loaded with the address of a four byte workspace which the system uses to keep track of what is happening.

Both these addresses must be in the central 32K of RAM so that they may be accessed if either or both the lower or upper ROMs are enabled. Usually RSX machine code is stored just above HIMEM and it is sensible to define these addresses within the main body of the code rather than scatter them around the memory without good reason.

The command table is primarily a list of jumps to direct the system to the section of code to be executed when an external command is issued. It is possible to have many different commands all logged on with a single call to &bcd1, although in this example there is only one. The first item in the command table must however be the definition of the address of the name table. (defw name_table)

The name table defines the actual command names as used from BASIC. The name must be in upper case, avoiding spaces and commas. The last character of each name must have bit 7 set. This is achieved by adding &80 to the last character. The '|' prefix does not form part of the name. As described above this is used by BASIC to detect that the command is not to be found in the BASIC ROM.

The order of names in the name table must correspond to the order of the jump instructions in the command table if multiple commands are being created. It is not necessary for the name in the command table to be the same as the name in the name table, although for simplicity this is often a good idea! The name table is finished with a zero byte.

If the above instructions are followed it is very easy to convert machine code routines to RSXs.

The functional code of the |FADE command can now be examined.

The first instruction is cp 2. |FADE requires two parameters – pen and rate. When an RSX command (or a CALL) is issued followed by parameters separated by commas, the number of parameters is contained in the A register.

This provides a useful error trap. If the wrong number of parameters is passed the routine can be intercepted.

Cp 2 subtracts two from the contents of the A register (without changing the A register) and the result affects the zero and carry flags in the F register. If A contains two the result will be zero and the zero flag will be set. If A contains any other number the zero flag will not be set and the next instruction – ret nz – will return to BASIC without having any other effect.

It is possible to jump to a more sophisticated error routine e.g. print a message or sound

LISTING 1: BASIC LOADER

```
10 REM screen fade
20 REM by D.Holmes
30 REM Use |FADE,pen,rate
40 start=HIMEM-&40:REM &40 is the length of the code
50 MEMORY start-1:REM Sets HIMEM to one below start
   of code
60 addr=start
70 FOR lin=1 TO 8
80 READ byte$,checksum
90 check=0
100 FOR n=1 TO 15 STEP 2
110 byte=VAL("&"+MID$(byte$,n,2))
120 check=check+byte
130 POKE addr,byte:addr=addr+1
140 NEXT
150 IF checksum<>check THEN PRINT "error in line",
   1000+10*(lin-1):STOP
160 NEXT
170 REM Relocator section
180 RESTORE 1080
190 check=0
200 FOR n=1 TO 4
210 READ DO$,AO$:REM High byte value of DOA and AO
   value as hexadecimal string
220 DObyte=VAL("&"+DO$)
230 AObyte=VAL("&"+AO$)
240 check=check+DObyte+AObyte
250 AOA$=HEX$(start+AObyte):REM works out AOA as a
   four digit hexadecimal string
260 DOAhi=start+DObyte:REM high byte of DOA
270 DOAlow=DOAhi-1:REM low byte of DOA
280 POKE DOAlow,VAL("&"+RIGHT$(AOA$,2)):REM low byte
   of AOA into low byte of DOA
290 POKE DOAhi,VAL("&"+LEFT$(AOA$,2)):REM high byte
   of AOA into high byte of DOA
300 NEXT
310 READ checksum
320 IF check<>checksum THEN PRINT "Error
   in relocation data":STOP
330 CALL HIMEM+1:REM Call the code to log on the RSX
340 NEW:REM Erase loader so that it cannot be run
   twice. Save before running!
1000 DATA 010DA2210BA2C3D1, 784
1010 DATA BC0000000012A2C3, 563
1020 DATA 17A2464144C500FE, 839
1030 DATA 02C0DD7E02CD2CBC, 980
1040 DATA 571E002100C072DD, 677
1050 DATA 46002310FD3E00BC, 624
1060 DATA 300218F21C2100C0, 569
1070 DATA 6B7E00BE0020E7C9, 1105
1080 DATA 2,d,5,9,e,12,11,17:REM DO and AO pairs as
   hexadecimal strings
1090 DATA 101:REM checksum
```

a bleep before returning to BASIC.

The next instruction – ld a,(ix+2) – illustrates how to access the parameters passed from BASIC. The parameters are stored in a data area pointed to by the IX register in the following way. The parameters are passed as two byte integers. They are stored in normal low byte/high byte notation in a block of memory starting from the address contained in the IX register.

The low byte of the last parameter in the list may be found at the address contained in IX and the high byte is pointed to by IX+1. The second last parameter is pointed to by IX+2 and IX+3 and so on. If there are n parameters the address of the yth parameter is found by the formula:

Low byte of address
= contents of ix +(n-y)*2
High byte of address
= contents of ix +(n-y)*2 +1

In this case IX+2 points to the low byte of the first parameter. This refers to the pen number and will normally be in the range 0 to 15. Only the low byte is needed for a number of this size. If a number greater than 255 was passed the high byte would be found at IX+3. The program ignores this so there is no need for an error trap at this point. If necessary, however, the value passed could be tested and errors could be detected and acted upon.

In this particular situation it will be seen that there is no need to worry about errors in the low byte as the next instruction copes with any illegal pen numbers.

The way the pen number is used to place a coloured pixel on the screen is not simple. It depends on screen mode and the ink to whichthe particular pen is set.

A discussion of this is not necessary here. Sufficient to say that the firmware call SCR_INK_ENCODE at &bc2c takes the value in the A register, masks out any unwanted bits and converts it to the range 0-1, 0-3 or 0-15 for screen modes 2, 1, or 0 respectively. It then returns in the A register an encoded ink value which can be poked directly into the screen memory area to display a pixel plotted in the current ink colour of the relevant pen. This value is then loaded into the D register for later use using the ld d,a instruction. The next two instructions set the E register to zero and set the HL register pair to &c000 which is normally the start of the screen memory area.

At this point nothing has happened to the screen. The DE and HL registers have been initialised with the values required at the start of the routine. The next step is to load the address pointed to by HL, i.e. &c000, with the value in D, i.e. the encoded ink. This plots a screen pixel with the pen number passed from BASIC. This will be at the top left corner of the screen if the screen has not been scrolled but may be anywhere if scrolling has occurred. It should be clear from the above discussion that ld b,(ix+0) loads B with the low byte of the second parameter which is the rate. As before it does not matter if a value greater than 255 is passed as the high byte is ignored and only the low byte is used.

LISTING 2: FADER SOURCE CODE

```
        org  &a200
.start
        ld   bc,command_table
        ld   hl,space  ;four byte workspace
        jp   &bcd1     ;log external command

.space rmem 4

.command_table
        defw name_table
        jp   fade

.name_table
        byte "FAD"     ;Define command name
        byte"E"+&80
        byte 0

.fade                  ;start of code
        cp   2         ;check number of parameters
        ret  nz        ;return if not two

        ld   a,(ix+2)  ;get 1st parameter=pen number
        call &bc2c     ;screen ink encode
        ld   d,a       ;encoded ink into d

        ld   e,0       ;set outer loop counter
        ld   hl,&c000  ;set hl to start of screen

.plot
        ld   (hl),d    ;ink into screen byte
        ld   b,(ix+0)  ;get 2nd par.=step rate into b

.next
        inc  hl        ;step up scrn. to next address
        djnz next

        ld   a,0
        cp   h         ;increases h to over &ff. is 0
        jr   nc,row    ;if so on to next row
        jr plot        ;if not go to next screen byte

.row
        inc e:increment outer loop counter
        ld   hl,&c000
        ld   l,e       ;steps up start by one byte
        ld   a,e       ;get e into a for comparison
        cp (ix+0)      ;if a=step rate,screen covered
        jr   nz,plot   ;go back if not covered
```

The next section labelled .next uses the automated instruction djnz. This acts on the B register and allows it to be used as a loop counter. At each pass through the loop **djnz next** reduces B by one and jumps back to .next until B reaches zero. Every time the loop is executed HL is increased by one. This has the effect as the loop cycles of increasing HL by the value in B. It should be clear that when the loop has been completed for the first time, HL contains (&c000+the contents of IX+0).

The next section tests if HL still points to part of the screen memory and acts accordingly. Firstly A is loaded with zero and then compared with H. H contains the high byte of the memory address currently being pointed to by HL. If this address is part of the screen H will contain a value between &c0 and &ff. If H is incremented by one from a value of &ff it will become zero. As the maximum increment in HL possible is 255, the value of the H register cannot increase by more than one at each circuit of the loop.

This allows the testing to be performed in the following way:

Cp h subtracts the value in H from the value in A without affecting either register and sets the zero and carry flags appropriately. As long as H is greater than A this operation will set the carry flag. The jr nc test will fail and then program jumps back to .plot with HL incremented by the number passed from BASIC in the rate parameter. If H equals zero there will not be a carry and the program jumps to .row. It would be equally valid to test the zero flag with a jr z,row instruction.

It is important to note that following the increment in HL its value is tested before the contents of the D register are poked into it. If the test was made afterwards there would be a risk of crashing the system by poking the D register contents into the system memory from &0000 upwards.

The final section .row when reached for the first time increments the E register from zero to one. HL is reset to &c000 and L is loaded with the value in E. This leaves HL containing &c001. The A register is loaded with E to allow it to be compared with the contents of IX+0 (the rate parameter).

If A (and therefore E) is not equal to (IX+0) then the program loops back to .plot and runs through the screen memory again. This time the addresses loaded with the encoded pen number in D are stepped up by one from the previous circuit of the loop.

Every time that .row is reached E is incremented until it reaches the value passed by the rate parameter. When this occurs the main loop at .plot has been performed 'rate' times and the whole screen has been filled with the pen required. The comparison gives a zero result and the routine returns to BASIC.

To install the RSX command the code can be assembled at the required location or can be loaded by a BASIC loader, e.g. Listing 1. It may also be loaded as a binary file at the address to which it was assembled.

Once the code is loaded into place the routine must be CALLed to log on the command. It is important to only CALL the code once as further CALLs may corrupt the workspace with unreliable results. Other RSXs with different workspaces may be added as desired however.

The effect of the |FADE command varies with the rate parameter. It is best to experiment with different values to find those which give the desired appearance. |FADE 0,9 is useful for clearing text.

This program could be developed further if required. For example the program as it stands assumes that the screen memory is from &c000 to &ffff. If the memory being used is the &4000 to &7fff block it will not work as expected. Additional code could be added to detect which area is in use with a call to the firmware routine SCR GET LOCATION at &bc0b. This call returns the high byte of the start of screen memory in the A register. This could then be used to initialise the screen start positions. Further testing of HL at the end of the screen memory block would also be required.

Next time: David Holmes tackles the tricky task of RSX relocation. Don't miss it!

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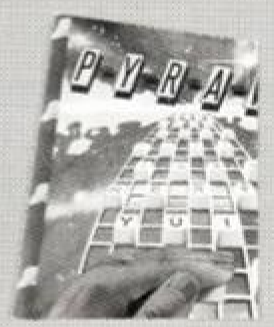
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Lightning fast on all tasks involving screen. True merging from separate files and disks to the cursor position is easy, and *Protext* supports standard CPC RSX's like DISC, TAPE, CAT etc. ROM version is excellent. Bad points: maximum file space limited to machine memory – about 22K on disk, 38K for the ROM version. As used by *AA*, if that's any recommendation (don't answer that).

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Tasman Software ☎ 0532 4388301
464, 464D, 6128, £19.95 tape, £24.95 disk ● *AA1*
464 is the tape based version (the same as *Amsword*). 464D has enhancements for a disk drive. 6128 makes full use of a 6128's extra memory. The latter pair include mailmerge facility. Easy to get to know: comprehensive help screens. Screen operations are slow, but may be customised for greater speed.

Pyraword



Discovery ☎ 0742 753423
£14.95 tape, £17.95 disk ● *AA18*
Similar in use to Discovery's *Pyradev*. It loads a profile of inks, printer codes and character set. Word counting, changing disk drives etc – 'housekeeping' tasks – are handily located. Uses extra memory of 128K machines for spooling printed documents and storing text. True file merging is impossible, and control keys are odd. Margins cannot be set further apart than 80 columns, although placing a printer control character at the right hand side allows wider documents to be printed.

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Amstrad DMP/2160

☎ 0279 454555
£149 including VAT ● *AA6*
Load through front: printer must be above paper; but loading continuous stationery is easy. Poor NLQ mode. £5 for ribbons. Low priced, rather than a bargain.

Amstrad DMP3160

☎ 0279 454555
£199 + VAT ● *AA29*
Similar to but faster than DMP2160. Accepts all IBM and Epson printing codes. NLQ is front loading system. Good buy.

Amstrad DMP4000

☎ 0279 454555
£349 + VAT ● *AA20*
A real text-cruncher. Wide carriage, and really flies across the paper, up to about 200 cps (in NLQ about 50 cps). Fonts available: standard 9 pin Pica, Elite, condensed etc. – but they are different, rather than just adjusted spacing for the same characters.

Amstrad LQ3500

☎ 0279 454555
£349 + VAT ● AA31
Cheapest 24-pin printer. Paper loaded from the rear – more time consuming. 30 cps in letter quality mode, and 62 cps in draft. Print quality excellent: plenty of different type-styles built in. Not ultra fast.

Citizen 120D

☎ 0800 282692
£199 + VAT ● *AA43*
Dimensions: 3.7 kgs, and 370mm x 90mm x 238mm. Draft quality is 'dotty,' and poor, but NLQ is sharp and simple. A quiet beast, with cable to the computer connected on the side. Manual includes a complete written breakdown of all the printer control commands, and their effects.

Epson LX800

☎ 01 902 8892
£279 + VAT ● AA29
Very fast for 9 pin. Control panel for style selection, and Epson compatible. Reverse winding sheets requires care, though.

Epson EX800

☎ 01 902 8892
£629 + VAT ● *AA29*
Upgradable in 101 ways – cut sheet feeds, serial ports, longer life ribbons. Quiet, with respectable printing speed. Sans Serif/Roman NLQ fonts incorporated. Control panel to select fonts – just the same font with different spacings.

Epson LQ500

☎ 01 902 8892
£399 + VAT ● *AA29*
Features galore and price to match. Handles both Sans Serif and Roman styles of NLQ, for instance. Colour-printing upgrade kit available. 24 pin printer, offering excellent quality printing. Control panel to select from many available fonts (ie, the same font at different widths).

Panasonic KXP3131U

☎ 0753 73181
£335.25 (discont.) ● *AA29*
Daisywheel therefore superb quality – but can't print bit graphics (no trendy screen dumps), and if you want different fonts, you have to plug in a different Diablo-compatible one. Not quiet.

Mannesmann Tally MT81

☎ 0734 788711
£149 + VAT ● *AA43*
Dimensions: 70mm x 100mm x 265mm; weight, 4.5 kgs. Prints Epson and IBM graphics. Draft mode print quality is good: square printhead pins put ink onto greater areas. The printed output is more ornate than the Citizen. Manual is superb, but falls down in failing to explain control codes: for that you have to buy the applications manual. Certainly a very good buy.

Panasonic KXP1081

☎ 0753 73181
£219 +VAT ● AA29
Similar to DMP2000/2160: chunky, 9 pins, 10 inch carriage and compatible with Epson codes. Thorough A4 manual, good NLQ mode – better than DMP – and condensed, draft and NLQ modes.

Star LC-10

☎ 0494 471111
£199/259 + VAT ● AA32
First price is for standard dot matrix printer. Fonts selected by button, rather than typing in fiddly control code. Second

price is for relatively inexpensive colour model. The machine uses multi-colour ribbon to produce different mixes, though there are currently no commercial programs to take advantage of this capability *(but see the Colourdump review in AA46, page 24).*

Star LC 24-10

☎ 0494 471111
£299 + VAT ● AA47
A low-cost 24 pin, 10 inch, 80 column Letter Quality printer: 8 resident fonts, all operable from the front control panel and 3 print variations.



■ INTEGRATED PACKAGES

Info-Script

Brunning ☎ 0245 252854
£50 disk ● 128K only ● *AA35*
Billed as the "complete database with word-processor and spelling checker," it's best with 256K. Well set up, easy to use and allows for changes in layout and content. recently 'supercharged'.

Protext Filer/Office

Arnor ☎ 0733 68909
£24.95/£34.95 disk ● *AA34*
Database that works comfortably with *Protext*, has powerful sorting options and comprehensive invoice printer. Can be slow, but good value.

Mini Office II

Database ☎ 0625 878888
£14.95 tape, £19.95 disk ● *AA6*
Astonishingly cheap word processor, database, spreadsheet, graphics, comms and label printer all-in-one, it's continued to sell, and sell, and sell... Not full specification, but at this price who's complaining?



■ EDUCATIONAL PROGRAMS

Amstrad Selection

Fernleaf Education ☎ 0474 359037
£25.95 disk/tape ● *AA32*
For age range 7 to 12+: Eightprograms – including*Fletcher's Castle, Market Stall, The Perfume Hunter, The Raiders, Ferry Captain, Treasure,* and *Thorn Sea.*

Arc Master Pack Plus

Arc Education ☎ 0472 812226
£48 disk● *AA32*
A massive pack of 90 programs: Junior; Primary; a parent/child adventure; DR Logo and word games. Each set available at £10 tape and £12.50 disk. Well presented with good graphics, reasonable musical ditties and plenty of options.

Kosmos

Kosmos ☎ 05255 3942
£9.95 tape, £13.95 disk● *AA32*
Answer Back Junior Quiz lets you either answer the question; make a choice from a number of options; or say whether something is true or false. There's also *Factfile 500*, sets of additional questions for the program: arithmetic, spelling, sport and natural history.

The other range from Kosmos: vocabulary tutors in French, Spanish, German and Italian.

Play School

School Software ☎ 010353 6149477
£9.95 tape, £14.95 disk● *AA32*
Six different utilities including Counting, Find It, Paintbox, Shapes, Match-up and How Much? Paintbox is the best. Other programs in the range are also worth a look, including *Biology, Chemistry* and *Physics* for older children.

Funschool 2

Database Software ☎ 0625 878888
£9.95 tape, £14.95 disk● *AA43*
So rare is it that educational software gets into the charts that it made the news pages of the weekly computer press. Actually there are three great packages here: under sixes, six to eights and over eights.



Wordhang

Bourne Education ☎ 0794 523301
£9.95 tape; £14.95 disk ● *AA32*
One of Bourne's range of ten programs. Others include *Happy Letters, Numbers* and *Writing* (all Infant); *Timeman One/Two* and *Map Rally* (all Junior); and the excellent *Chemistry* and *Physics Revision* (Senior).

■ BUSINESS/ ACCOUNTS

● *See also* Pendown *in* 'Word Processing'

Protext Office

Arnor ☎ 0733 68909
£34.95 ● CPM+, 6128 only ● *AA34*
Requires *Protext* and *Promerge* to run. Information inputted using *Protext*. Mail merge templates included, and very well implemented invoice printing feature. A genuinely useful business system.

SD Microsystems range

SD Microsystems ☎ 0462 675106
General Ledger ● £19.95 ● *AA32*
Sales Invoicer Pack ● £19.95 ● *AA26*
Small Traders Pack ● £24.95 ● *AA26*
Stock Accounting System ● £39.95 ● 6128 only ● *AA32*
SD Microsystems have a range of quality small business systems. Consult original reviews for in-depth explanations of what each does and how it differs from the others – or better still, ring them and ask.

■ DATABASES

AtLast Plus

Rational Solutions ☎ 056681 511
£39.95 ● CPM+,128k machines only ● *AA30*
Powerful: developed into user's requirements. Data capacity restricted only by disk size, and splitting fields into smaller elements possible. Printed output impressive. Beefy processing.

Masterfile III

Campbell Systems ☎ 0378 77762
£39.95 CPM+ ● *AA30*
With parent/child records – enabling tying together of records, saving space and time. Screen layouts and reports menu selected; not for faint hearts, but good results.

Random Access Database

Minerva Systems ☎ 0392 437756
£29.95 disk ● *AA6*
40 or 80 column screen. Good mathematical and string operations . Random disk accessing gives speed and power.
● *See also* Info-Script *in* '4. Integrated Packages'

■ SPREADSHEETS

Mastercalc 128

Campbell Systems ☎ 0378 77762
£33 disk ● 128K machines ● *AA4*
Can show two parts of spreadsheet at once. Includes notepad and calculator. Easy to use, but the mathematical formulae can only consist of the four basic arithmetic options. Slows down as more data is entered.

Matrix

Audiogenic Software ☎ 01 861 1166
£34.95 disk ● *AA18*
Uses disk to store data – so good capacity on the plus side, but poor speed on the minus side. Graphic options excellent. Onscreen prompts rare, making it hard at first. Calculating power good.

Supercalc II

Amsoft/Sorcim ☎ 0277 230222
£49.95 CPM+ ● *AA4*
First class documentation. Calculations can be determinative – performed on whether or not cell's contents match given value. Excellent help prompts and arithmetic functions.

Cracker

Newstar Software ☎ 0245 265017
£49.00 disk CPM+ ● *AA9*
Spreadsheets must be created from scratch. Documentation good, command sequences soon learned. Mathematical functions well done, with random numbers catered for. Files limited to 17K – and formulae programming not well implemented.



■ SOUND

Amdrum

Cheetah ☎ 0222 555525
£34.95 ● *AA13*
Digital drum machine. Editor comprehensive. Not Midi compatible: to hear output you plug it into amplifier.

DHCP Midi Interface

DHCP ☎ 0440 61207
£69.95 interface, £34.95+ disk s'ware ● *AA33*
DHCP produce Midi software for various Midi interfaces for CPC, which are incompatible with each other.

Foundation Step-Time Sequencer

Foundation Software ☎ 0252 543945
£34.95 disk
Quite simply the only step-time sequencer you can buy for your CPC.

Miditrack Performer

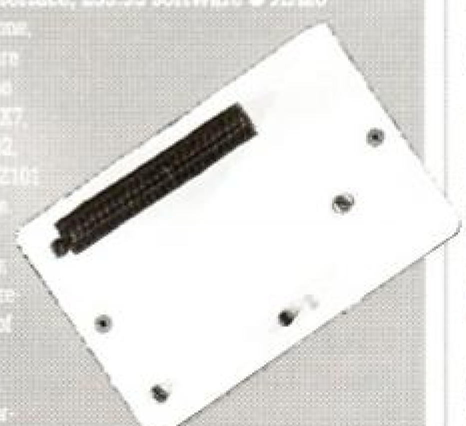
EMR ☎ 0702 335747
£49.95 interface, £79.90/£89.90 tape/disk s'ware● *AA13*
Midi interface plus sequencing software to drive Midi equipped instruments. Records each instrument then plays them all at once. Onscreen layout similar to multi-track recorder. Excellent.

Sound Blaster

Siren Software ☎ 061 228 1831
£34.99 ● *AA23*
Amplifier and pair of loudspeakers that plug into CPC for maximum 2 watts sound effects.

Midi Interface

Silicon Systems ☎ 061 848 8959
£59.95 interface, £59.95 software ● *AA26*
Useless alone, but software you can use with it – DX7, FB01, MT32, D50 and CZ101 – is diverse. Software prices vary, and lack presentation of EMR sequencer. High performance.



Ram Music Machine

RAM Electronics (Datel) ☎ 0782 744707
£49.99 tape, £59.99 disk ● *AA17*
All in one music package. Midi interface, sound sampler and music editor. Sampler can handle one sample of just over a second. Midi controller software and music editor comprehensive. No through port, though, so 464 users must use tape version. And you can't edit live played Midi compositions.



■ VISION

AMX Art

Database ☎ 0625 878888
£69.95 disk (includes mouse) ● *AA7*
User friendly, if little unsophisticated compared to *Advanced Art Studio*, but mouse helps greatly. Colour, spraycans, textures, circles and host of other features.

Advanced Art Studio

EEC ☎ 0753 888866
£24.95 disk ● *AA21*
Recently revitalised, this is the user-friendly, best and most powerful art package: works in all three modes. Can cycle through inks, and cut and paste different areas, transformations and reflections. Fill routines in coloured patterns. Available as a standard version for £15.95.



Cherry Paint

Siren Software ☎ 061 228 1831
£9.99 disk ● *AA20*
WIMP controlled – ie mouse moves pointer to various icons to pull-down menus. B/W mode 2 only, but fun. Curves are difficult, but this is a bargain.

DART Scanner

Dart Electronics ☎ 0502 513707
£79.95 ● *AA22*
Attach reading device to your DMP2000, 3000 or 3160. Feed in picture to printer: device reads in picture as B/W image. Quality onscreen isn't amazing, but it works and it's fun.

The Informer

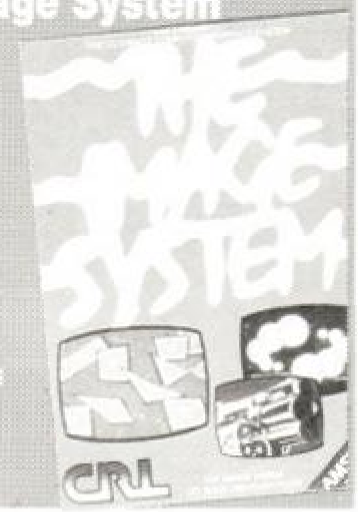
Treasure Island Software ☎ 0492 593549
£29 disk ● *AA33*
For creating animated displays, suitable for classroom and shop window: takes text, graphics and animated displays and produces slide show. Works best but not only with *Parrotry Plus* (see below).

Parrotry Plus

Treasure Island Software ☎ 0492 593549
£19.95 disk ● *AA30*
Rather than lots of effects used anywhere and at any time, *Parrotry Plus* 'remembers' every alteration and plays through the list to create animation. Note: can't dump pictures to printer without external program.

CRL Image System

CRL ☎ 01 533 2918
£19.95 tape, 24.95 disk ● *AA12*
Boasts range of picture manipulations and distortions, but lacks art options. Best on finished pictures – like a mini Quantel box.

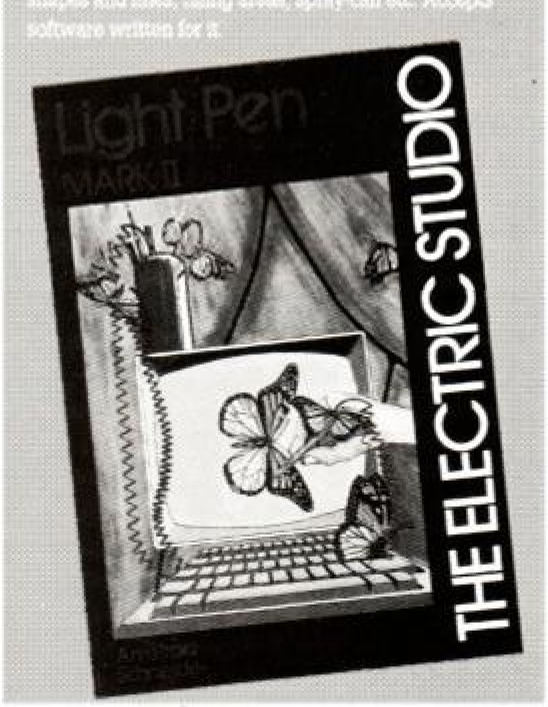


Vidi Digitizer

Rombo Productions ☎ 0506 414631
£89.95 ● *AA15*
Grabs picture from video recorder or camera and puts it on CPC screen, allowing you to alter it with an package. Easy to use. Software on tape, disk or ROM includes superb printer dump routine.

Electric Studio Light Pen

Electric Studio ☎ 0462 420222
£19.95 cass, £29.95 disk● *AA1*
Excellent drawing software, including rubber-banding shapes and lines, filling areas, spray-can etc. Accepts software written for it.



● Corrections, additions or ideas for sections to be included are welcome. Drop a line to: *AA Buyers*, *Amstrad Action*, 4 Queen St, Bath BA1 1EJ

I say, chaps, *AA55* will be out on March 8th. Jolly good show! Just make sure you don't miss it, what? Reserve your copy NOW!

AAfterthought

Hooray! *AA* celebrates its first month in the new offices. Still no sign of the heated pool, though...

It's war!

The *Amstrad Action* team has just returned from the scene of some of the fiercest fighting yet seen on the southernmost fringes of the Warminster Woods... Yes, it's 'running through the trees shooting paint pellets at each other' time again. We bring you all the latest on who shot whom, who surrendered and how often, and why Rod kept getting shot in the back.

Mentioned in despatches

Special medals were awarded to all of the *AA* team for their acts of unprecedented bravery, valour and incompetence. What follows is a list of all those brave team members, their role in the fighting, and how they got covered in, er, glory in that muddy hell.

● 'General' Ollie Alderton
Showed outstanding bravery as he led his troops from the front – and was shot within the first five minutes of each game.

● Trenton 'I'm no psycho' Webb
Special fashion award for wearing the meanest kit on the day, including 48-hole DMs and an M-16 which the judges made him leave in the car. Also commended for being completely invisible until the last five minutes of each game and then saying how easy it was.

● Adam 'keen as mustard' Waring
For jumping out from behind trees unexpectedly and running around a lot.

● Rod 'it was nothing' Lawton
For lying in the bottoms of ditches being shot to pieces and finding all the clumps of stinging nettles.

Special mention should also go to ex-ed Steve Carey, who fought doggedly on the side of the red team (hurrah!) against the evil blue hordes (boo!) led by Mad Mullah Alderton. And to ex-tech ed Pat MacDonald, who once more demonstrated astonishing tactical prowess as he led his army to victory again and again. He was also very good for hiding behind.



● Trenton and Adam in the thick of battle.

To the newsagent: Amstrad Action *is distributed by COMAG*

Dear newsagent,
Please reserve me a copy of the April issue of *Amstrad Action*, due out on Thursday 8th March.

Name:
Address:

Telephone number:
If you're under 16, please get your

YOUR SINCLAIR'S FUTURE

We're thrilled to announce that *Your Sinclair* magazine, that bastion of all things Spectrummy, has been acquired by Future Publishing. That brings the complement of Future computer titles up to nine, and also give a poke in the eye to all those computing snobs who reckon the 8-bit is dead.

Look out for *YS* in the newsagents. It's a brilliant mag, even if it is all about the Spectrum (*never heard of it – ed*).

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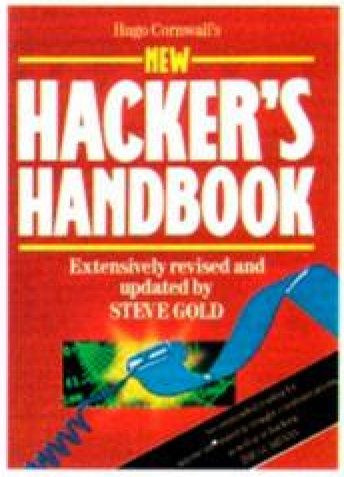
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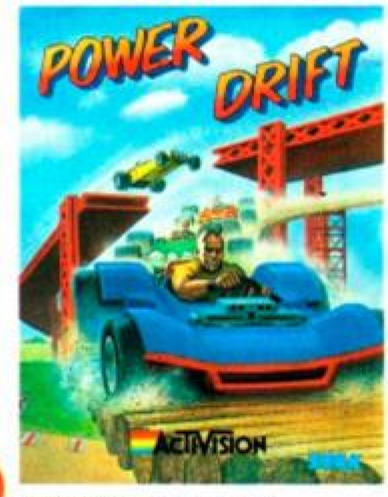
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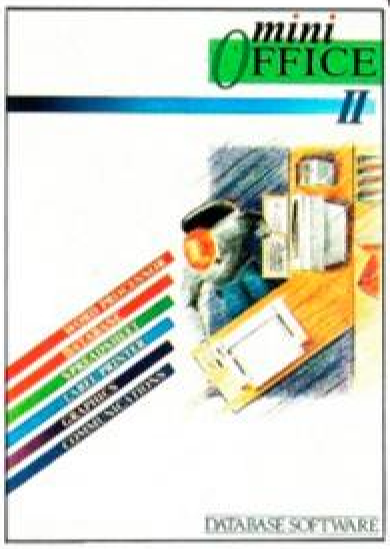
2 "From the gamemasters Virgin"



8 "An AA Mastergame"

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3 "An AA Buyers Guide winner"



9 "A 4 game compilation"

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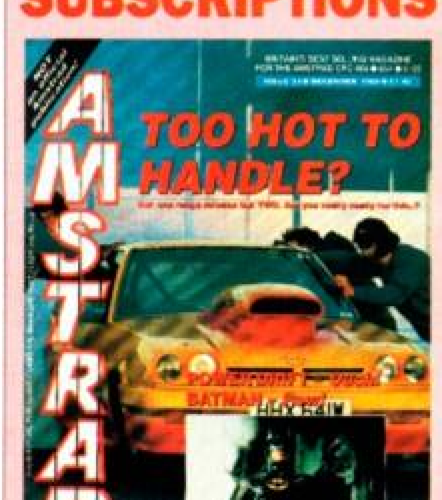


10 "A film bona



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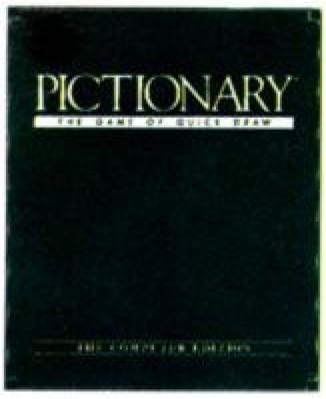
5 "Two winning games from Ocean"



12 "Obtain
in the



rue classic taken from the blockbuster
vie"



7 "Lots of christmas fun"

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AFTERBURNER

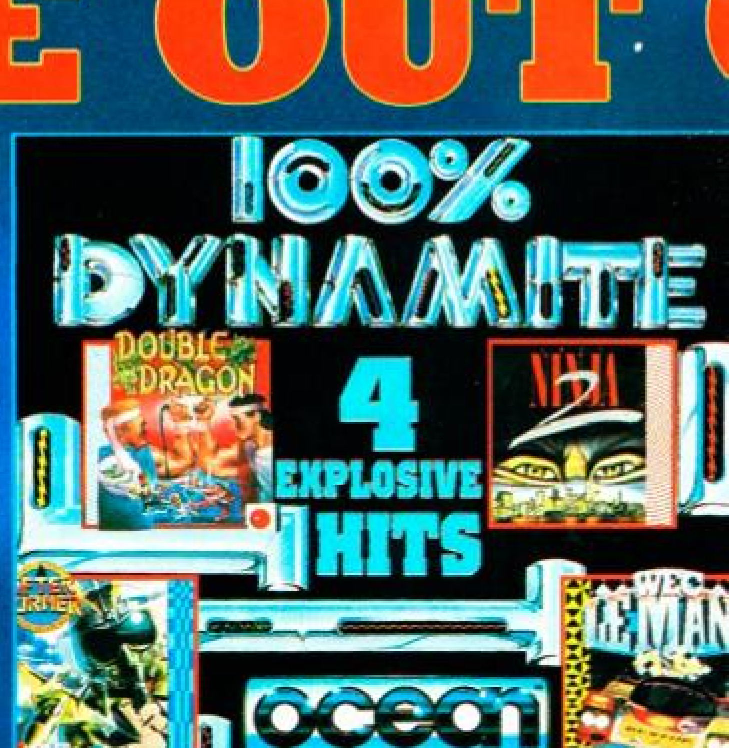
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